DISSERTATION ON

A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING PREVENTION OF OSTEOPOROSIS AMONG HEALTH CARE PERSONNEL WORKING IN RAJIV GANDHI GOVERNMENT GENERAL HOSPITAL, CHENNAI-03.

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ABSTRACT

INTRODUCTION

Osteoporosis is the most common bone disease in humans, representing a major public health problem. It is a silent disease until fractures occur which causes important secondary health problems and even death. Osteoporosis can be prevented, diagnosed, and treated before fractures occur. Prevention, detection, and treatment of osteoporosis should be a mandate of primary care providers.Hence the study was conducted to evaluate the effectiveness of structured teaching programme regarding prevention of osteoporosis among health care personnel working in Rajiv Gandhi Government General Hospital, chennai-03.

OBJECTIVES

The study objectives are to assess the level of knowledge on prevention of osteoporosis among health care personnel, to evaluate the effectiveness of structured teaching program on Knowledge regarding prevention of osteoporosis among health care personnel and to find the association between the knowledge on prevention of osteoporosis among health care personnel and selected demographic variable.

MATERIALS AND METHODS

A quantitative approach of one group pre-test and post-test pre experimental design,was used. There were 60 samples selected by using with non-probability sampling purposive sampling technique was used. Semi structured questionnaire was used to collect the data before and after the structured teaching programme.The data were tabulated and analyzed by using descriptive and inferential statistics.

RESULTS

The study results showed that there was a significant differences between the values of pre test40.71% and post test 80.07% level of knowledge regarding the prevention of osteoporosis. The computed t-value 19.61 was very highly significant of the p value of p=0.001***.

Regarding effectiveness of STP, the overall mean percentage knowledge score in the pre- test was 12.05 and 24.02 in the post test. On an average, in the post test, after having structured teaching program, health care personnel gained 39.90% more knowledge score than pre test score. The statistical paired 't' test indicates that enhancement in the mean percentage knowledge score was found to be significant at (P=0.001**) percent level for all the aspects under study. There was significant association between the gain in knowledge scores and selected demographic variables with age, education status, monthly income and menstrual history at (P=0.001**)

CONCLUSION:

The results revealed that the structured teaching programme, had a significant improvement in the knowledge of prevention of osteoporoisis and it helps to implement the preventive health behaviors among health care personnel working in Rajiv Gandhi Government General Hospital,Chennai-03.

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LIST OF ABBREVIATIONS

ABBREVIATION	EXPANSION
BMD	Bone mineral density.
FRAX	Fracture Risk Assessment Tool.
DEXA	Dual Energy X-ray Absorptiometry.
HBM	Health Belief Model.
PTH	Parathyroid Hormone.
CI	Confidential Interval.

CHAPTER-I
INTRODUCTION

"Love your bones, protect your future"

Bone provide the structure of the human body. Bone health is important to overall health because bones need to be healthy to support everyday life. To be supportive, bones must stay strong and fracture resistant. To resist fracturing, bone strength must be enhanced from a combination of bone quality and bone quantity. Bone quality refers to its architecture and mineralization while bone quantity refers to its mass and density.[1]

Khan et al, 2001, described that with current technology the quality of bone is more difficult and expensive to determine than the quantity of bone. Therefore bone mineral density (BMD) a measure of bone quantity that is the amount of bone mass per unit area/volume is the most commonly used outcome measure for bone strength used in both clinical and research settings. Small increases in BMD result in large increases in bone strength and a BMD increase of just 5-8% can result in a 64-87% increase in bone strength. This increased bone strength, especially the ability for more bone to be strategically placed at the sites of highest strain can result in increased resistance to fractures. Increasing BMD is the primary focus in promoting and enhancing bone health but if BMD is reduced and becomes too low, then bone health is compromised which can lead to osteoporosis.[2]

The World Health Organization has defined osteoporosis as a bone mineral density (BMD) more than 2.5 Standard deviation below the young normal mean. Osteopenia is defined as BMD between 1 and 2.5 Standard deviation below the young normal mean. According to these criteria, the frequency of osteoporosis among 50–59 year old whites is 4% taking into

account BMD readings at the femoral neck. This figure rises to 52% in women aged 80 years or more.[3]

Kanis, Melton, et al (1994), highlighted in his thesis that Osteoporosis is a disease in which BMD is 2.5 standard deviations below the young adult mean value. It weakens bones and can result in an increased risk of bone fracture. Bone strength is reduced in individuals with osteoporosis because bone is lost at a higher rate than it is replaced. Osteoporosis deteriorates bone strength before signs and symptoms occur the disease is usually not diagnosed until a bone fracture actually occurs. Although osteoporosis affects the whole skeleton, the most common sites for bone fractures due to osteoporosis are the hip, spine, and wrist. Osteoporosis is a serious and debilitating disease that can have adverse effects on both the quality and quantity of life and osteoporosis and osteoporotic fractures can lower self-esteem, while increasing fear, anxiety and depression, and also lead to increased disability and mortality especially with osteoporotic fractures in the hip and spine.[4]

The BMD tends to achieve its peak value during the third decade of life, usually up to 30 years of age. After 30 years of age, peak BMD has been shown to start decreasing due to age-related bone loss. Therefore the optimal approach for preventing osteoporosis is to maximize peak BMD for the first 30 years of life with adequate weight-bearing physical activity and calcium consumption, for the maintainance of peak BMD.[5]

Osteoporosis is a highly prevalent disease and imposes a great burden on the health system of both developed and developing countries. Hip and vertebral fractures are associated with impaired quality of life and a 20% reduction in survival. World wide an osteoporotic fracture is estimated to occur every 3 second, a vertebral fracture every 22 seconds. Osteoporosis is estimated to affect 200 million women worldwide approximately one tenth of women aged 60 to one fifth of women aged 70,

two fifth of women aged 80 and two thirds of women aged 90. Osteoporosis affects an estimated 75 million people in Europe, USA and Japan for the year of 2000, there were an estimated 9 million new osteoporotic fractures of which 1-6 million were at the hip, 1.7 million were at the forearm and 1.4 million were clinical vertebral fractures.

By the year 2050, the global population of individuals aged ≥65 years is expected to reach to more than 1.5 billion. Assuming a constant age specific risk of hip fracture, the projected number of osteoporotic hip fractures worldwide is estimated to increase from 1.66 million in 1990 to 6.26 million in 2050.

It has been estimated that there was nearly a 25% increases in hip fractures worldwide by 2050, the worldwide incidence of hip fracture in women protected to increase by 310% and 240% in women. In USA by the year 2010, it is estimated that more than 52 million women and men in the same age category if get affected and the current trends continues the figure will climb to more than 61 million by 2020.[6]

In India, the reasons ascribed for lower bone mineral density include possible genetic differences, nutritional deficiency, and smaller skeletal size; this may be even more relevant for the region where per capita milk consumption is low. It is well known that osteoporosis often remains undiagnosed as a silent disease until a fragility fracture occurs and early detection can prevent fractures. The department of health research, the government of India in its recently included osteoporosis as one of the priority areas in the non communicable diseases[7]

Bhaskar Borgohain, Pranjal Phukan, Kalyan Sarma had conducted a study which was based on retrospective analysis of first 282 out of 336 patients undergoing dual-energy X-ray absorptiometry scan for possible osteoporosis between 2014 and 2017 in a large tertiary care teaching referral hospital located in the North eastern region of India. This

is the first such study from this region of India. They found that the vertebral osteoporosis was found to be much more common than femoral neck osteoporosis, making this group of patients at higher risk of subsequent osteoporotic vertebral compression fracture and future disability if not proactively treated, educated and followed up for proper compliance. Fortunately, most patients did not have any previous fracture despite found to have spinal and hip osteopenia or osteoporosis, meaning thereby that there is a window of opportunity for secondary prevention of new osteoporotic fractures. Food-based approach, physical activity and lifestyle modification through health education may be appropriate for prevention of osteoporosis and risk of fractures.[8]

Jeffrey pradeep Raj, Anu Mary Oommen, Thomas V.Pal,(2018) has conducted a cross sectional study on Dietary calcium intake and physical activity levels among urban South Indian postmenopausal women which was aimed to assess DCI and physical activity among postmenopausal women. The risk factors for a low intake of dietary calcium were also assessed. 106 postmenopausal women selected by systematic random sampling from the city of Erode, Tamil Nadu, India. DCI and physical activity were measured using validated questionnaires. The mean DCI was 632.72 ± 28.23 mg/day. The proportion of women consuming less than 800 mg/day of dietary calcium was 74.5%. Only 10.4% of the women studied (11 out of 106) were on calcium supplements while 55% had low physical activity. A low knowledge and a low socioeconomic status (SES) score of the family were significantly associated with low DCI after adjusting the age, dietary preferences, and educational and occupational statuses. DCI was below the Recommended Dietary Allowance (RDA) and the majority of postmenopausal women were physically inactive, indicating the need for better education regarding DCI and the need for calcium supplements and physical activity,

all of which can contribute to the prevention of the consequences of osteoporosis.[9]

1.1 NEED FOR THE STUDY

In Rajiv Gandhi Government General hospital more than 25 percent of the health care worker were diagnosed to have osteoporosis and they are all under treatment for osteoporosis. Even though some of the health care work know the risk factors and preventive behaviors but they are unable to follow that in their daily life. Some of the health care workers in the younger group doesn't have enough knowledge towards the osteoporosis and its prevention.

The bone mass begins to decrease from the age of 30 so in order to protect against osteoporosis practicing healthy lifestyle and nutritional habits that build bone are especially important. These habits should include consuming recommended amount of calcium and vitamin-D, performing weight- bearing and muscle strengthening exercises especially from childhood and avoiding alcohol and smoking[9].

Osteoporosis can be prevented by certain health behaviors that can enhance BMD especially adequate (high-intensity/impact) weight-bearing physical activity and calcium consumption. Weight-bearing physical activity includes activities that involve jumping and resistance training. Calcium consumption can come from calcium rich or calcium-fortified foods and calcium supplements. But osteoporosis prevention is best done by engaging in both adequate weight-bearing physical activity and calcium consumption at an early age while the skeleton is growing, especially during childhood and adolescence, because it is the time in the lifespan when bone is most efficiently built. The combination of weight bearing physical activity and calcium consumption at an early age have been shown to increase peak BMD and bone mass better than either weight-bearing physical activity or calcium consumption alone.[10.]

Osteoporosis prevention education interventions are given with the intention to provide education and increase osteoporosis knowledge which lead to osteoporosis preventive behaviors, such as weight-bearing physical activity and calcium consumption. The knowledge regarding prevention of osteoporosis provided will increase the knowledge, but the participants should follow the preventive behaviors in their day to day activities in order to prevent the occurrence of the disease[11].

Prevention of osteoporosis in the whole population focuses on nutritional and life style changes. The goals include acquiring minimal peak skeletal bone mass and maintaining this bone mass as long as possible. Increasing awareness of the modifiable risk factors for osteoporosis through patient education is an important primary care role. The primary care is provided to the general public by the health care personnel. The health care personnel should have enough knowledge regarding the preventive behaviors and they should have those preventive behaviors.[12]

India is a sun-rich country, hence deficiency of vitamin D had reported at all age groups. Primary prevention also known as health promotion focuses on preventing osteoporosis and illness with specific preventive measures. Poor nutritional status has adverse effects on the health of a weight-bearing skeleton. As a result risk for fall is higher which may cause fractures and risk for fall is also a direct effect of excessive drinking (International Osteoporosis Foundation, 2012).[13]

According to the National Institute of Health, one out of every two women and one in four men over the age of 50 will break a bone in their lifetime due to osteoporosis. In addition, roughly 25% to 30% of women who suffer a hip fracture will die within one year of the injury. This is astonishing because it accounts for more deaths than does breast cancer.

The young individuals are not engaging in adequate weight-bearing physical activity and calcium consumption to effectively prevent osteoporosis. Cross sectional studies of college women have found that although approximately eight to nine out of 10 of them knew that adequate weight-bearing physical activity and calcium consumption could prevent osteoporosis, fewer than one out of 10 of them actually engaged in adequate weight-bearing physical activity and calcium consumption. These findings show an absolute need to encourage young individuals, or at least young women, to engage in adequate weight-bearing physical activity and calcium consumption to prevent osteoporosis.[14]

In Rajiv Gandhi Government General Hospital in the Institute of orthopaedic and Traumatology outpatient department daily more than 10 patients are coming for treatment of osteoporosis. In Master health Checkup department more than 40 people doing their checkup per day. In that, monthly 50% of people are given the report of osteopenia and 25% were give the report of osteoporosis. But the affected people are not taking the ideal treatment for osteoporosis because of lack of awareness and knowledge about the seriousness of that disease.

Nowadays, the emerging of newer disease is common worldwide. But in the management and treatment facilities for that newer disease is not available or it is under research process. In that case the old proverb “prevention is Better than cure” is the best ideal remedy for escaping from those disease. Osteoporosis is one of the diseases which we can prevent it. The life style changes, dietary pattern may enhance quality of the bones and to prevent the disease.

Based on the clinical experience and the literature review the investigator found that many clients with osteoporosis do not have enough knowledge on prevention and life style change of osteoporosis. Even though so many investigations and scales like FRAX scale and

bone DEXA scan (dual energy X-ray So the absorptiometry), the early diagnosis and the preventive therapy is very less among the public. Being a medical professional the health care worker also doesn't have the awareness to protect them from osteoporosis. Hence, the investigator felt that there is a need to get access to and impact knowledge on prevention and life style change of osteoporosis among Heath care Personnel who are all working in RGGH.

1.2 STATEMENT OF THE PROBLEM

A study to assess the effectiveness of structured teaching programme on knowledge regarding prevention of osteoporosis among health care personnel working in Rajiv Gandhi Government General Hospital, chennai-03.

1.3 OBJECTIVES OF THE STUDY

- To assess the pre test level of knowledge on prevention of osteoporosis among health care personnel.
- To evaluate the effectiveness of structured teaching program on Knowledge regarding prevention of osteoporosis among health care personnel..
- To find the association between the knowledge on prevention of osteoporosis among health care personnel and selected demographic variable.

1.4 OPERATIONAL DEFINITIONS

Assess

It refers to the gathering of factual information about knowledge on prevention of osteoporosis among health care personnel before giving them a planned teaching programme.

Effectiveness

It refers to gain in knowledge on prevention of osteoporosis among health care personnel as determined by significant difference between pre test and post test knowledge scores.

Structured Teaching Programme

It refers to a systematically developed teaching programme designed for health care personnel about the meaning, risk factors, signs and symptoms, diagnosis, management, complication and lifestyle modifications and dietary patterns to give information on prevention of osteoporosis.

Knowledge

It refers to the correct response given by the health care personnel on the pre test about prevention of osteoporosis.

Prevention

It refers to the implementation of the knowledge on prevention of osteoporosis among health care personnel after structured teaching programme and to protect them from osteoporosis.

Osteoporosis

It is a systemic skeletal disorder characterized by low bone mass and micro-architectural deterioration of bone tissue leading to enhanced bone fragility and a consequent increase in fracture risk.

Health Care Personnel

Health care personnel are the Female Nursing Assisstants who assist the staff nurses in providing health care to the patients and those who have the vague symptoms of back pain, and knee pain.

1.6 ASSUMPTIONS

The study is based on the following assumptions.

1) The education may enhance the knowledge of health care personnel regarding prevention of osteoporosis.

2) The information on prevention of osteoporosis may be helpful for the health care personnel to reduce the risk of osteoporosis.

1.5 HYPOTHESIS

H1: There will be significant effectiveness of Structured teaching programme in providing the knowledge on the prevention of osteoporosis among health care personnel.

H2: There will be significant difference between pre test and post test knowledge scores of health care personnel on prevention of osteoporosis.

1.7 DELIMITATIONS

1) The study is only for Female nursing assisstants

2) The data collection period is for 4 weeks.

3) Study is limited to only 60 samples.

4) The health care personnel who are all not under the treatment of osteoporosis.

5) The health care personnel who are diagnosed as osteoporosis

1.8 CONCEPTUAL FRAMEWORK

A conceptual framework is a theoretical approach to study the problems that are scientifically based which emphasis the selection, arrangement and classification of itsconcepts. A conceptual framework broadly explains phenomena of interest, expresses assumption and reflects a philosophical stance and it explains the relationship between the variable in the diagrammatic representation.

The conceptual framework for this study is derived from One of the first theories of health behavior, the health belief model was developed in the 1950s by social psychologists Irwin M. Rosenstock, Godfrey M. Hochbaum, S. Stephen Kegeles, and Howard Leventhal at the U.S. Public Health Service. It remains one of the best known and most widely used theories in health behavior research.[15]

The present study aims at evaluating the effectiveness of structured teaching programme on knowledge regarding prevention of osteoporosis among health care personnel.

In this study, the health belief model was used. Here it suggests that people's beliefs about health problems, perceived benefits of action and barriers to action, and self-efficacy engagement or lack of engagement in health-promoting behavior. A stimulus or cue to action, must also be present in order to trigger the health-promoting behavior. The theoretical constructs are

1) Perceived severity.

2) Perceived susceptibility.

3) Perceived benefits.

4) Perceived barriers.

5) Modifying variables.

6) Cues to action.

7) Self –efficacy.

PERCEIVED SEVERITY

Perceived severity refers to the subjective assessment of the severity of a health problem and its potential consequences. The health belief model proposes that individuals who perceive a given health problem as serious are more likely to engage in behaviors to prevent the health problem from occurring. Perceived seriousness encompasses beliefs about the disease itself, whether it is life-threatening or may cause disability or pain as well as broader impacts of the disease on functioning in work and social roles.[16]

Here in this study the perceived severity is the knowledge regarding the osteoporosis disease and its consequences and the physical disabilities and the impact of the disease process in the health of an individual.

PERCEIVED SUSCEPTIBILITY

Perceived susceptibility refers to subjective assessment of risk of developing a health problem. The health belief model predicts that individuals who perceive that they are susceptible to a particular health problem will engage in behaviors to reduce their risk of developing the health problem. Individuals with low perceived susceptibility may deny that they are at risk for contracting a particular illness. Individuals who believe they are at low risk of developing an illness are more likely to engage in unhealthy or risky behaviors. Individuals who perceive a high risk that they will be personally affected by a particular health problem are more likely to engage in behaviors to decrease their risk of developing the condition.

The combination of perceived severity and perceived susceptibility is referred to as perceived threat. Perceived severity and perceived susceptibility to a given health condition depend on knowledge about the condition. The health belief model predicts that higher perceived threat leads to higher likelihood of engagement in health-promoting behaviors.

Here in this study the perceived susceptibility is the individual behavior which can lead to occurrence of the disease in future.

PERCEIVED BENEFITS

Health-related behaviors are also influenced by the perceived benefits of taking action. Perceived benefits refer to an individual's assessment of the value or efficacy of engaging in a health-promoting behavior to decrease risk of disease. If an individual believes that a particular action will reduce susceptibility to a health problem or decrease its seriousness, then he or she is likely to engage in that behavior regardless of objective facts regarding the effectiveness of the action.

The knowledge gained from the structured health education programme which provide the knowledge regarding the behavior, life style modification, the diet and the exercises to be performed daily in order to prevent the osteoporosis disease.

Perceived Barriers

Health-related behaviors are also a function of perceived barriers to taking action. Perceived barriers refer to an individual's assessment of the obstacles to behavior change. Even if an individual perceives a health condition as threatening and believes that a particular action will effectively reduce the threat, barriers may prevent engagement in the health-promoting behavior.

In this study, the health care workers time schedule for work found to be the barrier in following the preventive behavior. But the perceived

health education regarding prevention of osteoporosis must outweigh the perceived barriers in order for behavior change to occur.

Modifying Variables

Individual characteristics, including demographic, psychosocial, and structural variables, can affect perceptions (perceived seriousness, susceptibility, benefits, and barriers) of health-related behaviors. Demographic variables include age, sex, race, ethnicity, and education, among others. Psychosocial variables include personality, social class, and peer and reference group pressure, among others.

Structural variables include knowledge about the disease and prior contact with the disease, among other factors. The health belief model suggests that modifying variables affect health-related behaviors indirectly by affecting perceived seriousness, susceptibility, benefits, and barriers.

The limited exposure and the inadequate knowledge regarding the prevention aspects of osteoporosis can be modified by the structured teaching programme regarding the disease process and the complications of osteoporosis and the easy and earlier measures to be adopted in order to avoid the occurrence of the osteoporosis.

Cues to Action

The health belief model posts that a cue, or trigger, is necessary for prompting engagement in health-promoting behaviors. Cues to action can be internal or external. Physiological cues (e.g., pain, symptoms) are an example of internal cues to action. External cues include events or information from close relatives or others. The media or health care providers promoting engagement in health-related behaviors. The intensity of cues needed to prompt action varies between individuals by perceived susceptibility, seriousness, benefits, and barriers.[17]

The structured teaching programme regarding the prevention of osteoporosis by life style modifications is the cue to the health care personnel in order to trigger the health promoting behaviours.

Self-Efficacy

Self-efficacy was added to the four components of the health belief model (perceived susceptibility, seriousness, benefits, and barriers) in 1988. Self-efficacy refers to an individual's perception of his or her competence to successfully perform a behavior. Self-efficacy was added to the health belief model in an attempt to better explain individual differences in health behaviors. Eventually, the health belief model was applied to more substantial, long-term behavior change such as diet modification, exercise, and smoking. Developers of the model recognized that confidence in one's ability to effect change in outcomes (self-efficacy) was a key component of health behavior change

The health care personnel confidence in their ability to effect change in their health behavior is the outcome and the key component in the effectiveness of the structured teaching programme.

CHAPTER-II
REVIEW OF LITERATURE

Literature review can serve a number of important functions in the research process and they also play a critical role for nurses seeking to develop an evidence based practice. Literature reviews can inspire new research ideas and help to lay the foundation for studies. A literature review is a crucial early task for most quantitative researchers.

A literature review in a quantitative study can help to shape research questions contribute to the argument about the need for a new study suggest appropriate methods and a point to a conceptual or theoretical framework.

The sources to obtain more information on the selected topic were pubmed search, journals, books, unpublished thesis and internet. For the the purpose of logical sequence the chapter is divided into

1) Studies related to overview of osteoporosis.

2) Studies related to etiological and risk factors of osteoporosis

3) Studies related to effectiveness of structured teaching program.

4) Studies related to creating awareness on prevention of osteoporosis by structured teaching program.

I. STUDIES RELATED TO THE OVERVIEW OF OSTEOPOROSIS:

Tümay Sözen,Lale Özışık, and Nursel Çalık Başaran (2017) Osteoporosis is a common and silent disease until it is complicated by fractures that become common. It was estimated that 50% women and 20% of men over the age of 50 years will have an osteoporosis-related fracture in their remaining life. These fractures are responsible for

lasting disability, impaired quality of life, and increased mortality, with enormous medical and heavy personnel burden on both the patient's and nation's economy. Osteoporosis can be diagnosed and prevented with effective treatments, before fractures occur. Therefore, the prevention, detection, and treatment of osteoporosis should be a mandate of primary healthcare providers.[18]

Willem F. Lems, Hennie G. Raterman, (2017) has written on a journal of Critical issues and current challenges in osteoporosis and fracture prevention and stated that Osteoporosis is a silent disease with increasing prevalence due to the global ageing population. Decreased bone strength and bone quality is the hallmark of osteoporosis which leads to an increased risk of fragility fractures in elderly. It has been estimated that approximately 50% of women will suffer during their lifetime from an osteoporotic fracture. This must be considered as a major health concern, as it has previously been established that fragility fracture has been associated with decreased quality of life due to increased disability, more frequent hospital admission and most importantly osteoporotic fractures have been related to an augmented mortality risk.[19]

Guowei Li, Lehana Thabane, Jonathan D. Adachi (2017) has conducted a study to determine Osteoporosis and osteoporotic fractures remain significant public health challenges worldwide. Recently the concept of frailty in relation to osteoporosis in the elderly has been increasingly accepted, with emerging studies measuring frailty as a predictor of osteoporotic fractures. It is concluded that measuring the grades of frailty in the elderly could assist in the assessment, management and decision-making for osteoporosis and osteoporotic fractures at a clinical research level and at a health care policy level.[20]

L.G. Rao and A.V. Rao (2016) has declared that oxidative stress due to reactive oxygen species that are shown to cause the development of osteoporosis may be prevented by supplementation with the antioxidants lycopene and polyphenols. Results of in vitro studies in osteoblasts and osteoclasts, animal intervention studies, epidemiological studies and clinical intervention studies on lycopene and polyphenols are evidence for their potential use as alternative or complementary agent with other established drugs approved for the prevention or treatment of osteoporosis in women.[21]

Liu W , Yang LH , Kong XC ,et al (2015) conducted a Meta-analysis of osteoporosis fracture risks, medication and treatment. Osteoporosis is a brittle bone disease that can cause fractures mostly in older men and women. The methods of Medline, Embase, and CINAHL were literature searched for these observational studies from year 1998 to 2009, and up to 2015. The results of meta-analysis of osteoporosis research on fractures of postmenopausal women and men are presented. The use of bisphosphonate therapy for osteoporosis has been described with other drugs. [22]

Anuradha.V Khadilkar (2015) stated in her article that the number of women with osteoporosis, with reduced bone mass and the disruption of bone architecture, is increasing in India. In Indian women, calcium, vitamin D, and bisphosphonates are the commonest first-line therapies used. The use of other drugs such as hormone replacement therapy, estrogen agonists, calcitonin, parathyroid hormone, and denosumab is decided as per the affordability and availability of treatment options. Major gaps still remain in the diagnosis and management of osteoporosis, thus highlighting the need for more structured research in this area. This review focuses on the epidemiology of osteoporosis in Indian women and available treatments.[23]

II. STUDIES RELATED TO ETILOGICAL AND RISK FACTORS OF OSTEOPOROSIS:

Mohamad NV (2016) has conducted a study to determine that Age-related estrogen and testosterone deficiency was the most important factor of bone loss in elderly men. Osteoporosis is a condition causing significant morbidity and mortality in the elderly population worldwide. Age-related testosterone deficiency is the most important factor of bone loss in elderly men. Human experimental studies showed that estrogen was needed in suppressing bone resorption, but both androgen and estrogen were indispensable for bone formation. As a conclusion, maintaining optimal level of androgen is essential in preventing osteoporosis and its complications in elderly men and women. [24]

Horita N (2016) has conducted a study to clarify corticosteroids cause serious adverse effects such as osteoporosis, diabetes, and immune suppression. Thus, physicians have to properly assess the risk of adverse effects to prevent them. In this review, he discuss the risk of osteoporosis by corticosteroids that are prescribed for pulmonary diseases. Inhaled corticosteroids are not serious risk factors of osteoporosis. If systemic corticosteroids are planned to be administrated in the prednisolone equivalent dosage of 5 mg/day or more for three months or longer, risk of bone fracture have to be assessed regardless of the primary pulmonary disease. If necessary, prophylactic agent such as bisphosphonates should be prescript.[25]

Daru (2016) has conducted a study on early prediction of risk factors in preventing the osteoporosis. Fracture risk prediction algorithm using clinical risk factors, with or without measurement of bone mineral density, have enabled more accurate targeting of treatment and a range of cost-effective pharmacological interventions is available to reduce fracture risk. In particular, treatment rates in high-risk individuals are

low and adherence to treatment is poor. Addressing this treatment gap through measures such as fracture liaison services, which provide a coordinated and cost-effective strategy for secondary fracture prevention, is an important future priority.[26]

Compston J (2016) has conducted a study relating the risk factors of osteoporosis that loss of muscle or bone mass occurs with ageing, immobility and in association with a variety of systemic diseases. Pharmacological interventions to reduce fracture risk are exploring new mechanisms of action, in particular the uncoupling of bone resorption and formation. Emerging key issues for clinical trial design include adequate phenotyping of patients (personalised medicine), optimisation of the physiological background (multimodal approach) and the use of meaningful and robust outcomes relevant to daily clinical practice. At present, effective treatments that combine beneficial effects on both muscle and bone are lacking, although this is an important target for the future.[27]

Del Puente A, Esposito A (2016) has conducted a study on Osteoporosis represents a relevant health issue, being the first cause of bone fractures in the elderly with subsequent implications in terms of survival and social costs. The improved knowledge about the physiopathology of this disease has led to a new definition of Osteoporosis, which shifts the attention from the "decrease in bone mass"to several elements related to what has globally been defined as bone quality. In fact, it has been shown that clinical risk factors affecting bone homeostasis coincide with osteoporosis risk factors. The evaluation of such clinical risk factors is an important element in the assessment of the global fracture risk. [28]

Gourlay ML (2015) has conducted a study in Clinical practice guidelines universally recommend for bone mineral density (BMD)

screening to identify osteoporosis in women aged 65 years and older. Risk assessment is recommended to guide BMD screening in postmenopausal women under age 65.. Based on longitudinal studies of incident osteoporosis and fracture in postmenopausal women, an initial BMD test should be ordered for all women aged 65, and the frequency of re-screening should be based on age and BMD T score (more frequent testing for older age and lower T score). Although clinical practice guidelines recommend BMD screening according to risk factors for fracture in postmenopausal women under age 65, no standard approach to risk assessment exists.

Singla R, Gupta Y (2015) conducted a study on People with diabetes shows higher prevalence of musculoskeletal diseases as compared to general population. Diabetes affects all components of musculoskeletal system viz. muscles, bones and connective tissue. Diabetic myonecrosis is a unique condition seen only in people with diabetes. Other diseases include amyotrophy, osteoporosis and increased fracture risk, carpal tunnel syndrome, adhesive capsulitis of shoulder, trigger finger and limited joint mobility. Like all other chronic diseases, musculoskeletal diseases impact quality of life negatively.[30]

Cusano NE (2015) has conducted a study on effects of smoking on bone health. Smoking has long been identified as a risk factor for osteoporosis, with data showing that older smokers have decreased bone mineral density and increased fracture risk compared to nonsmokers, particularly at the hip. The increase in fracture risk in smokers is out of proportion to the effects on bone density, indicating deficits in bone quality. Advanced imaging techniques have demonstrated micro architectural deterioration in smokers, particularly in the trabecular compartment. Smoking cessation may at least partially reverse the adverse effects of smoking on the skeleton.[31]

Patricia Clark (2015) has conducted a study on Risk Perception and Knowledge about Osteoporosis to identify the level of knowledge and risk perception of developing osteoporosis and its association with socio-demographic variables and risk factors. Individuals older than 18 years living in Mexico City were surveyed. The most important variables associated with the perception of risk were age (<45 years), gender (female), and family history of osteoporosis. Individuals know a lot about osteoporosis, but they engage in risky behaviors and lack perception of their risk in developing it. Interventions should aim at raising awareness about personal responsibility and about the likelihood of developing this condition.[32]

III. STUDIES RELATED TO EFFECTIVNESS OF STRUCTURED TEACHING PROGRAM

Nisha M.Varghese1 (2013) has conducted a quasi experimental study to assess and compare the knowledge, attitude and expressed practices of working women regarding prevention of osteoporosis. Positive significant relationship (r=0.59) was found between post test knowledge and attitude of working women in experimental group. A significant association was found between level of pos test knowledge with religion (t=7.55), post test attitude with religion (t=10.04) and source of knowledge (t=5.25) in experimental group.[33]

Choi Euysoo (2010) has conducted a study to determine the level of awareness and self-efficacy and their relationships to osteoporosis among young women. There were significant positive correlations among awareness and self-efficacy about osteoporosis. This study suggests that health care professionals need to provide effective interventions for young women to enhance their osteoporosis awareness and self-efficacy for preventing osteoporosis.[34]

IV. STUDIES RELATED TO PREVENTION OF OSTEOPOROSIS

Ali Khani Jeihooni (2018) has conducted a quasi case study on the Effect of a Prevention Program Based On Health Belief Model on Osteoporosis. A questionnaire consisting of demographic information, Health Belief Model (HBM) constructs was used to measure nutrition and walking performance for prevention of osteoporosis before, immediately after intervention and after four months. Experimental and the control group, respectively, immediately and Four months after the intervention, the mean scores of the health belief model components and nutritional and walking performance in experimental group was better than the control group.[35]

Seyedeh Narjes Razavi (2017) by Considering the importance of preventive education in adolescence, a study was performed to determine the effect of health education, based on health belief model, on self-efficacy in prevention of osteoporosis in female adolescents. Results of this study showed that behavioral models, such as the health belief model, could provide a framework for improvement of education in the field of nutritional efficacy for the prevention of osteoporosis.[36]

Amina Abd Elrazek Mahmoud, (2017) has conducted a descriptive correlation research study to assess the risk factors of osteoporosis among working women, and develop health educational guidelines to prevent/reduce osteoporosis at Benha City. The study concluded that the common risk factors identified were; family history, lack of exercises, irregular exposure to sunlight, and insufficient taken protein and vitamin D. Also osteoporosis health guideline were needed for prevention and reduction of osteoporosis.[37]

Testa G, Pavone V (2015) conducted a study on Osteoporosis is the most common bone disease, affecting millions of people and causing a high risk of fractures and a loss of quality of life. The purpose of this review is to overview osteoporosis, including its definition, etiology, and incidence, and then provide some information on possible dietary strategies for optimizing bone health and preventing osteoporosis. A correct diet to prevent osteoporosis should contain adequate amounts of calcium, vitamins D and K, protein, and fatty acids.[38]

Noordin.S, Glowacki.Z (2015) has conducted a study on Parathyroid hormone and its receptor gene polymorphisms: implications in osteoporosis and in fracture healing. Genetic factors are associated with osteoporosis by influencing bone mineral density (BMD), bone turnover, calcium homeostasis, and susceptibility to osteoporotic fractures. Polymorphisms in genes encoding PTH may contribute to genetic regulation of BMD and thus susceptibility to fracture risk. PTH stimulates the proliferation of osteoprogenitor cells, production of alkaline phosphates, and bone matrix proteins that contribute to hard callus formation and increases strength at the site of fractured bone. During remodeling, PTH promotes osteoclastogenesis restoring the original shape, structure, and mechanical strength of the bone. Some PTH polymorphisms have shown an association with fracture risk.[39]

Bartl R, Bartl C (2015) has conducted a study that Osteoporosis is still an under diagnosed and has insufficiently theraphy widespread disease in Germany. Of the estimated 7 million osteoporosis patients only 1.5 million receive a guideline conform diagnosis and even less receive appropriate treatment. Some 90 % of patients are provided with analgesics but only 10 % receive an effective therapy, although efficacious, well-tested and affordable medications are available. This article describes the current state of diagnostics (bone density measurement with dual X-ray absorptiometry, FRAX), prophylaxis of

fractures (screening program) and therapy (use of economic and effective medications with low side effects). Novel medications are undergoing clinical testing and a "healing" of bone reduction with restoration of the normal bone structure.[40]

Rozenberg S. Body JJ (2014) has conducted a study and declared that dairy products provide a package of essential nutrients that is difficult to obtain in low-dairy or dairy-free diets, and for many people it is not possible to achieve recommended daily calcium intakes with a dairy-free diet. This review provides information for health professionals to enable them to help their patients make informed decisions about consuming dairy products as part of a balanced diet. Intake of up to three servings of dairy products per day appears to be safe and may confer a favourable benefit with regard to bone health.[41]

CHAPTER –III
METHODOLOGY

This chapter deals with the description of research methodology adopted by the investigator. Methodology is a systematic way to solve research problems. It helps the researcher to project a blue print of the research undertaken. Research methodology involves the systematic procedure by the researcher, which starts from initial identification of the problem to its final conclusion. The methodology of research indicates the general pattern of organizing the procedure for gathering valid and reliable data for the purpose of investigation. This study was undertaken to assess the effectiveness of structured teaching programme on knowledge regarding prevention of osteoporosis among health care personnel working in Rajiv Gandhi government general hospital.

This chapter includes research approach, research design, settings of the study, population, sampling technique, criteria for selection of samples, sample size, description of the tool, validity of the tool, pilot study and procedure for data collection and plan for data analysis.

3.1 RESEARCH APPROACH

The research approach was quantitative

3.2 RESEARCH DESIGN

Descriptive research design of one group pre-test and post-test design was selected in order to evaluate the effectiveness of structured teaching programme. The research design is represented diagrammatically as follows,

O1	X	O2
Pre assessment	Structured teaching programme	Post assessment

Where,

O1 - Pre test

O2 – Post test

X - Structured teaching programme on prevention of osteoporosis.

3. 3 STUDY SETTINGS

The study was conducted in all the wards of Rajiv Gandhi government general hospital, chennai-03. It is the one of the apex institution in south East Asia. This hospital has almost all specialties and super specialties where tremendous education and pioneering research are carried out.

3.4 DURATION OF THE STUDY

4 weeks.(2.1.18 to 27.1.18)

3.5 STUDY POPULATION

Target population

The health care personnel working in Rajiv Gandhi Government General Hospital.chennai-03.

Accessible population

The health care personnel available during the period of data collection.

3.6 SAMPLE

The health care personnel working in Rajiv Gandhi Government General Hospital.ch-03.

3.7 SAMPLE SIZE

A total number of 60 health care personnel were selected for the study.

3.8 SAMPLING CRITERIA

3.8.1 Inclusion criteria

1) Female Nursing Assistants in the age group of 25 to 45 years.

2) Female Nursing Assistants who are willing to participate.

3) Health care personnel who can understand Tamil or English.

4) Female Nursing Assistants who have the vague symptoms of back pain, shoulder pain and knee pain.

3.8.2 Exclusion criteria

1) Health care personnel of male gender.

2) Those who are all not available at the time of study.

3) Female Nursing Assistants who were taking treatment for osteoporosis.

4) Female Nursing Assistants already attended program related to osteoporosis.

3.9 SAMPLING TECHNIQUE

The sampling technique used in this study was non-probability purposive sampling.

3.10 RESEARCH VARIABLES

Independent Variables (IV) : Knowledge about the level of knowledge on prevention of Osteoporosis.

Dependent Variables (DV) : Structured teaching programme.

Attribute Variables (AV): Personal characteristics which include religion, marital status, age, gender, Diet, educational qualification, occupation and income.

3.11 DESCRIPTION OF DATA COLLECTION TOOL

The tool prepared in the study was based on the information gathered from the Review of literature, objectives of the study. An interview was conducted by using Interview schedule to collect the data.

3.12 DEVELOPMENT AND DESCRIPTION OF THE TOOL

The researcher developed the tool on the basis of objectives of the study, Tool was developed after extensive review of literature from various textbook journals, internets and discussion and guidance from the experts in the field of nursing and medical experts in Rajiv Gandhi government general hospital and personal experience of researcher in the field and statistician were consulted for the development of tool. The tool was developed in English and translated in to tamil. Congruency was maintained in translation.

TOOL CONSISTS OF TWO SECTIONS

Section - A

It consist of 14 semi structured questions to assess demographic variables of health care personnel includes the basic information like age, religion, marital status, educational status, monthly income, height, weight and body mass index and menstrual history.

Section –B

Assessment of Knowledge

It consisted of 30 semi structured questions to assess the knowledge based on meaning, causes, early detection and prevention of osteoporosis. It is a multiple choice item which consisted of three options was given, one is key and 2 are distracters.

Categories of the semi structure Questionaire:

S. No	CATEGORIES	TOTAL ITEMS	PERCENTAGE
1.	Meaning	3	10%
2.	Etiology	7	23.3%
3.	Diagnostic test	2	6.67%
4.	Signs and symptoms	4	13.3%
5.	Management	5	16.67%
6.	Prevention	8	26.67%
7.	Complication	1	3.33%
	TOTAL	30	100%

3.12.1 Scoring interpretation

An interview schedule was used to assess the knowledge on prevention of osteoporosis among health care personnel. It contains 30 multiple choice questions and scores were divided according to the aspect wise as follows.

- Each correct option carries '1' mark.
- Incorrect option carries '0' mark.

Based on the score, the percentage was calculated as follows:-

$$\text{Percentage} = \frac{\text{Obtained score}}{\text{Total score}} \times 100$$

Based on the percentage, the level of knowledge was interpreted as Grade 1 2 and 3.

3.12.2 VALIDITY OF THE TOOL

The tool was validated by panel of Doctors expert in orthopedics and faculty members in Medical Surgical nursing experts. Few suggestions were given by experts and the tool was modified accordingly.

3.12.3 RELIABILITY OF THE TOOL

The reliability of the tool was checked by using test retest method and the reliability value for knowledge scale was r = 0.77. This show that the tool was highly reliable and feasible for conducting the main study.

3.13 HUMAN RIGHTS AND ETHICAL CONSIDERATIONS

The study was approved by the ethical committee constituted by the college. Permission was obtained from the Head of the institution to conduct the study. Informed consent was obtained from the participant of health care personnel who participated in the study.

3.14 PILOT STUDY

After obtaining permission from the Director Clinical and Academic affairs. The pilot study was conducted at Rajiv Gandhi Government General Hospital, Chennai-03 from 24.07.17 to 29.07.17. Totally 10 health care personnel who were all fulfilled the inclusion criteria were included for the pilot study samples. After establishing rapport with samples, self introduction was given. The purpose of the study was explained and the consent was obtained from the participants. Interview was conducted by the investigator using interview schedule to assess the osteoporosis knowledge towards early detection and prevention of osteoporosis. It took approximately 25 minutes for the

investigator to complete the interview with one sample. The results revealed that the tool was feasible and easy to administer.

3.15 PILOT STUDY RECOMMENDATIONS

The tool was feasible and main study was carried out without any modification after pilot study. Pilot study is a trial run for the main study, to test the reliability, practicability and feasibility of the study. The samples on which the pilot study was conducted were excluded in the main study.

3.16 DATA COLLECTION PROCEDURE

Formal permission to conduct the pilot study and main study was obtained from the Dean and Director of orthopedics in Rajiv Gandhi government general hospital, chennai. The period of the study was extended for four weeks, the data was collected from Monday to Saturday 8am to 4 pm. Using non probability purposive sampling technique 60 samples were selected who fulfilled the selection criteria.

The investigator introduced her to the selected sample of the health care worker and written consent was obtained from each participant after giving assurance of confidentiality. Then the workers were assessed about the knowledge of prevention of osteoporosis by use of semi structure questionnaire. Each day data was collected from available samples and the samples of 3 or 5 samples were gathered as a group.

The pre test data was collected for 25 minutes. The structured teaching programme was implemented on the same day for 45 minutes using lecture and discussion method with lap top, flip cards, booklets which was prepared by the investigator after consulting with the specialist. The health care worker participated with interest and they were alert and enthusiastic. Certain points were repeated for better

understanding and doubts were clarified and a booklet were given to each health care worker at the end of the discussion.

After 3 days of interval post test was conducted for 25 minutes among the same samples using the same questionnaire and evaluated the effectiveness of structured teaching programme Rajiv Gandhi government general hospital.chennai.

3.17 PLAN FOR DATA ANALYSIS

Descriptive and inferential statistics were used for data analysis.

3.17.1 Descriptive Statistics

1. Frequency and percentage distribution was used to assess demographic variables and level knowledge of prevention of osteoporosis.

2. Frequency, percentage distribution, mean and standard deviation was used toassess level of knowledge among health care personnel.

3.17.2 Inferential Statistics

1) Quantitative knowledge score in pretest and posttest were compared using student's paired t-test.

2) Qualitative level of knowledge in pretest and post test were compared using Stuart-Maxwell test /extended Mc Nemar test

3) Association between knowledge gain score and demographic variables are assessed using one way ANOVA F-test and student independent t –test.

4) Effectiveness and generalization was given using mean with 95% CI and Percentage with 95%.

CHAPTER –IV
DATA ANALYSIS AND INTERPRETATION

Data analysis and interpretation is the core step in research process. The importance of analysis and interpretation of the collected data is to systematically organize, classify and summarize it, so that the results can be interpreted and comprehended to give all the answers that triggered the research. This chapter deals with analysis and interpretation of data collected from 60 Health care personnel working in Rajiv Gandhi Government General Hospital, Chennai-03. The data collected were edited tabulated, analyzed, interpreted and the findings were presented in the forms of tables and figures.

ORGANIZATION OF DATA

The data has been tabulated and analyzed according to the objectives and interpreted in the following sections.

Section-A: Distribution of the demographic variables of health care personnel working in Rajiv Gandhi Government General Hospital.

Section-B: Assessment of pre test level of knowledge of health care personnel towards prevention of osteoporosis.

Section-C: comparison of pretest and post test knowledge of health care personnel towards prevention of osteoporosis.

Section D: Assessment of the effectiveness of the structured teaching programme regarding prevention of osteoporosis.

Section-E: Association between level of knowledge on prevention of osteoporosis with demographic variables of health care personnel.

SECTION-A: DISTRIBUTION OF THE DEMOGRAPHIC VARIABLES OF HEALTH CARE PERSONNEL WORKING IN RAJIV GANDHI GOVERNMENT GENERAL HOSPITAL.

Table 4.1 Frequency and percentage distribution of demographic variables of Health Care Personnel

Demographic Variables		No. of Health Care Personnel (N)	%
Age in years	25 -30 years	9	15.00
	31 -35 years	25	41.67
	36 -40 years	22	36.66
	41 -45 years	4	6.67
Height	130-140 cms	9	15.00
	140-150 cms	41	68.33
	150-160 cms	10	16.67
Weight	20 -40 kgs	10	16.67
	40 -60 kgs	28	46.67
	60 -80 kgs	22	36.66
Educational Qualification	Secondary education	46	76.66
	Diploma	7	11.67
	Graduate	7	11.67
Religion	Hindu	47	78.33
	Muslim	4	6.67
	Christian	9	15.00
Marital status	Married	54	90.00
	Unmarried	6	10.00
	Widow / Divorced	0	0.00
Monthly family income	<Rs. 5000	0	0.00
	Rs. 5001 – 7000	21	35.00
	>Rs. 7000	39	65.00
Diet pattern	Vegetarian	7	11.67
	Non vegetarian	53	88.33
Habits	Tea/coffee drinking	60	100.00
	Alcohol consumption	0	0.00
	Tobacco chewing	0	0.00

Demographic Variables		No. of Health Care Personnel (N)	%
Exercise	Often doing exercise	7	11.67
	Doing exercise daily	4	6.67
	Not doing exercise	49	81.66
Menstrual history	Regular	52	86.67
	Irregular	8	13.33
	Attained menopause	0	0.00

Analysis of demographic variables presented in tables and explicated in different plots. Table 4.1 shows the frequency and percentage distribution of the demographic variables of health care personnel.

The health care worker age was divide into four age groups. It reveals distribute age from 36-40 years is 22(36.66%),the age from 31-35 years is 25(41.67%), the age from 25-30 years is 9(15%).

The health care personnel height was divide into three groups. The height from 150-160 cm were 10(16.67%) and the height 140-150 cm were 41(68.33%) and the height from 130-140 cm were 9(15%).

The health care personnel weight is divide into three groups. The weight from 60-80 kg were 22(36.66%)and the weight from 40-60 kg were 28(46.67%) and the weight of 20-40 kg were 10(16.67%).

Educational status divided into three groups. Higher secondary, Diploma and Graduate. With respect to the education 46(76.66%) had higher secondary education, 7(11.67%) had diploma qualification and 7(11.67%) had Graduation.

The health care personnel were divide into three groups based on their religion hindu, Christian and muslims. Figure 9 reveals the pie

chart of pictorial distribution. With respect to religion, 47(78.33%) belongs to Hinduism, 4(6.67%) belongs to Muslims and 9(15%) belongs to Christian.

Considering the marital status of the health care personnel 54(90%) were Married, 6(10%) were Unmarried and none of them were widow or divorced. But majority of them married.

The health care personnel being working n the Government sector, they divided into three groups according to the salary they paid monthly. In that 39(65%) of health workers paid above 7000 salary, 21(35%), and 21(35%) health personnel paid between 5000-7000 and none of them paid less than 5000.

On the basis of the diet pattern divided into two groups vegetarian and Non vegetarian. In that 53(88.33%) were belongs to non vegetarian and 7(11.67%) were belongs to vegetarian.

Based on their habits divided into three groups those who drinks tea or coffee, consumption of alcohol and tobacco chewing. In this 60 (100%) had the habit of drinking tea and coffee and none of them had the habit of consuming alcohol and tobacco chewing.

Regarding the Exercise the health care personnel were divide into three groups. Figure 11 bar diagram reflects the distributes exercise among them. In this 7(11.67%) of health care personnel had the habit of often doing the exercises, 4(6.67%) are doing exercises daily and 49(81.66%) are not doing exercises.

Considering the menstrual history of the health care personnel, 52(86.67%) had the regular menstrual cycle and 8(13.33%) had the irregular menstrual cycle and none of them had attained menopause.

SECTION –B ASSESSMENT OF PRE TEST LEVEL OF KNOWLEDGE OF HEALTH CARE PERSONNEL TOWARDS PREVENTION OF OSTEOPOROSIS

Table-4.2 Frequency and percentage distribution of each domain wise pre test level of knowledge score

Domains	No. of Questions	Min – Max Score	Knowledge Score		
			Mean	SD	% of mean score
Meaning	3	0 -3	1.40	.64	46.67%
Etilogy	7	0 -7	3.02	1.11	43.14%
Diagnostic test	2	0 - 2	.93	.63	46.50%
Signs and symptoms	4	0 - 4	1.47	.95	36.75%
Management	5	0 - 5	1.73	.86	34.60%
Prevention	8	0 - 8	3.07	1.06	38.38%
Complications	1	0 - 1	.43	.53	43.00%
Total	30	0 - 30	12.05	2.41	40.17%

Table 4.2 depicts each domain wise pre-test level of knowledge on prevention of osteoporosis among health care personnel. It has been found that percentage of mean score on the knowledge aspects of osteoporosis is higher than the prevention aspects of the osteoporosis. The response dents are having maximum percent of mean score on the following criteria's like meaning (46.67%), etiology (43.14%), diagnostic test (46.50%), signs and symptoms (36.75%), management (34.60%) and complications (43.00%). But in case of management and prevention of osteoporosis, the health care personnel are having least knowledge score of 34.60% and 38.30% respectively.

Table 4.3: Frequency and percentage distribution of overall pretest knowledge score

	No. of questions	Min – Max score	Knowledge Score	
			Mean ±SD score	%
Overall score	30	0 -30	12.05±2.41	40.71%

Table 4.4 Frequency and percentage distribution of pretest level of knowledge

Level of knowledge	No. of health care personnel	%
Inadequate knowledge	55	91.7%
Moderate knowledge	5	8.3%
Adequate knowledge	0	0.0%
Total	60	100%

Table No.4 shows the level of knowledge regarding prevention of osteoporosis among health care personnel. In general 91.7% of health care personnel are having inadequate knowledge ,8.3% of them having moderate knowledge and none of them are having adequate knowledge.

SECTION-C: COMPARISON OF PRETEST AND POST TEST KNOWLEDGE OF HEALTH CARE PERSONNEL TOWARDS PREVENTION OF OSTEOPOROSIS.

Table-4.5: Frequency and percentage distribution of each domain wise Post test level of knowledge on prevention of osteoporosis

Domains	No. of Questions	Min – Max Score	Knowledge Score		
			Mean	SD	% of mean score
Meaning	3	0 -3	2.67	.63	89.00%
Etilogy	7	0 -7	5.73	1.44	81.86%
Diagnostic test	2	0 - 2	1.50	.72	75.00%
Signs and symptoms	4	0 - 4	3.05	1.16	76.25%
Management	5	0 - 5	3.82	1.16	76.40%
Prevention	8	0 - 8	6.47	1.36	80.88%
Complications	1	0 - 1	.78	.42	78.00%
Total	30	0 - 30	24.02	3.89	80.07%

Table 4.5 represents each domain wise post-test percentage of knowledge on prevention of osteoporosis among health care personnel. In this table it describes the response dents after attending structured teaching programme the percentage of mean score has increased and higher than the pre test level of knowledge. They are having most knowledge in meaning (89.00%), etiology(81.86%), diagnostic test(75.00%), signs and symptoms (76.25%), complications(78.00%) and in the prevention aspects it shows knowledge gain is up to (80.88%) from (38.38%) in the pre test value.

Table-4.6: Frequency and percentage distribution of Post test level of knowledge on prevention of osteoporosis

Posttest Level of Knowledge

Level of Knowledge	N	Percentage %
Inadequate knowledge	0	0.0%
Moderate knowledge	12	20.0%
Adequate knowledge	48	80.0%
Total	60	100%

Table No. 4.6 depicts the post-test level of knowledge about prevention of osteoporosis among health care personnel. After attending the structured teaching programme assessment of the level of knowledge of prevention of osteoporosis reveals that 48(80%) are having adequate knowledge ,12(20%) of them having moderate level of knowledge score and none of them are having inadequate level of knowledge score about prevention of osteoporosis.

Table-4.7: Overall Post Test Knowledge Score

	No. of questions	Min – Max score	knowledge score	
			Mean ±SD score	%
Overall score	30	0 -30	24.02±3.89	80.07%

Table-4.7 shows ,post-test percentage of knowledge regarding prevention of osteoporosis among health care personnel. Overall post-test percentage of knowledge score is 80.07% among health care personnel.

Table-4.8 :Frequency and percentage distribution of each domain wise pretest and posttest percentage of knowledge gain score

Domains	Posttest knowledge	Pretest knowledge	% of knowledge gain
Meaning	89.00%	46.67%	42.33%
Etilogy	81.86%	43.14%	38.72%
Diagnostic test	75.00%	46.50%	28.50%
Signs and symptoms	76.25%	36.75%	39.50%
Management	76.40%	34.60%	41.80%
Prevention	80.88%	38.38%	42.50%
Complications	78.00%	43.00%	35.00%
Total	80.07%	40.17%	39.90%

Table 4.8 shows each domain wise knowledge gain score among the health personnel. This table shows that the purpose of the study is to merge the knowledge of practices to followed to prevent osteoporosis. Significance of difference between pretest and post test score calculated using student paired t-test.

Knowledge about **Meaning**, in pretest , health personnel are having 1.40 score since in post test they are having 2.67score. Difference is 1.27 . This difference is large and it is statistically significant difference.

Knowledge about **Etiology**, in pretest, health personnel are having 3.02 score where in post test they are having 5.73 score. Difference is 2.71 . This difference is large and it is statistically significant difference.

Knowledge on **Diagnostic test**, in pretest, health personnel are having 0.93score whereas in post test they are having 1.50 score.

Difference is 0.57. This difference is large and it is statistically significant difference.

Knowledge on **Signs and symptoms**, in pretest, health personnel are having 1.47 score since in post test they are having 3.05 score. Difference is 1.58 . This difference is large and it is statistically significant difference.

Knowledge on **Management**, in pretest, health personnel are having 1.73score whereas in post test they are having 3.82 score. Difference is 2.09 . This difference is large and it is statistically significant difference.

Knowledge on **Prevention**, in pretest ,health personnel are having 3.07score whereas in post test they are having 6.47 score. Difference is 3.40 . This difference is large and it is statistically significant difference.

Knowledge on **Complication**, in pretest ,health personnel are having 0.43 score where in post test they are having 0.78 score. Difference is 2.35 . This difference is large and it is statistically significant difference.

Table-4.9 Frequency and percentage distribution comparison of the pretest and post-test level of knowledge score

Level of Knowledge	Pre Test		Post Test		Generalized McNemar's test
	N	%	N	%	
Inadequate knowledge	55	91.7%	0	0.0%	$\chi 2=50.45$ P=0.001***(S)
Moderate knowledge	5	8.3%	12	20.0%	
Adequate knowledge	0	0.0%	48	80.0%	
Total	60	100%	60	100%	

Before Structured teaching programme, 91.7% of the health care personnel are having inadequate level of knowledge score, 8.3% of them having moderate level of knowledge score and none of them are having adequate level of knowledge score.

After Structured teaching programme, none of the health care personnel are having inadequate level of knowledge score, 20.0% of them having moderate level of knowledge score and 80.0% of them are having adequate level of knowledge score.

Level of knowledge gain between pretest and post test estimated by using Generalised McNemar's chi square test. Since the P value estimated projects as p=0.001 which is statistically significant at $p<0.05$ level, the hypothesis accepted.

SECTION-D: ASSESSMENT OF THE EFFECTIVENESS OF THE STRUCTURED TEACHING PROGRAMME REGARDING PREVENTION OF OSTEOPOROSIS.

Table-4.10: Frequency and percentage distribution of effectiveness and generalization of knowledge score

	Max Score	**Mean Score**	**Mean difference of knowledge gain score with 95% confidence interval**	**Percentage difference of knowledge gain score with 95% confidence interval**
Pretest	30	12.05	11.97 (10.74 – 13.18)	39.90% (35.80% –43.93%)
Posttest	30	24.02		

Table no 4.10 depicts the effectiveness of structured teaching program among health care personnel. On an average, in post test, after having structured teaching program , health care personnel gained 39.90% more knowledge score than pretest score.

Differences and generalization of knowledge gain score between pretest and post test score calculated using and mean difference with 95% Confidential interval and proportion with 95% Confidential interval. The Figure 18 is the Box pictorial representation of pre test and post test level of knowledge score.

Table-4.11: Frequency distribution of comparison of overall knowledge score regarding prevention of osteoporosis

	No. of health personnel	Pretest Mean±SD	Posttest Mean±SD	Mean difference Mean±SD	Student'S paired t-test
Overall Knowledge Score	60	12.05 ± 2.41	24.02 ± 3.89	11.97 ± 4.72	t=19.61 P=0.001*** DF = 59, significant

* significant at P≤0.05 ** highly significant at P≤0.01 *** very high significant at P≤0.001 DF= Degrees of Freedom

Table no 4.11 shows the comparison of overall knowledge before and after the administration of structured teaching programme.

On an average, health personnel are improved their knowledge from 12.05to 24.02 after the administration of structured teaching programme. Or we can say , in pre test they are able to answer only 12 questions before administration of structured teaching programme, after STP, they are able to answer up to 24 questions. Due to structured teaching programme they are able to answer 12 more questions correctly. This difference is statistically significant. Statistical significance was calculated by using student's paired 't'test.

The above table shows that the results of application of student's paired 't'test to area wise pre test and post test knowledge scores. The computed 't' values (19.61) between the mean of pre test and post test was more than the critical 't' value obtained from 't' table at a level of significance of 0.05%. the result of 't' test shows that the improvement of mean knowledge score of post test when compared with lesser value of pre test were not by chance but due to the gain in knowledge because of planned teaching programme was effective at a level of very high significance of 0.05.

SECTION–E: ASSOCIATION BETWEEN LEVEL OF KNOWLEDGE ON PREVENTION OF OSTEOPOROSIS WITH DEMOGRAPHIC VARIABLES OF HEALTH CARE PERSONNEL.

Table-4.12 Frequency and percentage distribution of association between the pre test level of knowledge gained and the demographic variables of health care personnel.

Demographic Variables		Pretest Level of Knowledge Score						N	Chi Square Test
		Inadequate		Moderate		Adequate			
		N	%	N	%	N	%		
Age in years	25 -30 years	7	77.8	2	22.2	0	0.0	9	$\chi 2$=3.05 P=0.38(NS)
	31 -35 years	23	92.0	2	8.0	0	0.0	25	
	36 -40 years	21	95.5	1	4.5	0	0.0	22	
	41 -45 years	4	100.0	0	0.0	0	0.0	4	
Height(cm)	130-140 cm	8	88.9	1	11.1	0	0.0	9	$\chi 2$=1.10 P=0.57(NS)
	140-150 cm	37	90.2	4	9.8	0	0.0	41	
	150-160 cm	10	100.0	0	0.0	0	0.0	10	
Weight(kg)	20 -40 kg	10	100.0	0	0.0	0	0.0	10	$\chi 2$=1.77 P=0.41(NS)
	40 -60 kg	26	92.9	2	7.1	0	0.0	28	
	60 -80 kg	19	86.4	3	13.6	0	0.0	22	
Educational Qualification	Higher Secondary	43	93.5	3	6.5	0	0.0	46	$\chi 2$=0.84 P=0.65(NS)
	Diploma	6	85.7	1	14.3	0	0.0	7	
	Graduate	6	85.7	1	14.3	0	0.0	7	
Religion	Hindu	43	91.5	4	8.5	0	0.0	47	$\chi 2$=2.27 P=0.32(NS)
	Muslim	3	75.0	1	25.0	0	0.0	4	
	Christian	9	100.0	0	0.0	0	0.0	9	
Marital status	Married	50	92.6	4	7.4	0	0.0	54	$\chi 2$=0.61 P=0.43(NS)
	Unmarried	5	83.3	1	16.7	0	0.0	6	
	Widow / Divorced	0	0.0	0	0.0	0	0.0	0	
Monthly family income	<Rs. 5000	0	0.0	0	0.0	0	0.0	0	$\chi 2$=0.06 P=0.81(NS)
	Rs. 5001 – 7000	19	90.5	2	9.5	0	0.0	21	
	>Rs. 7000	36	92.3	3	7.7	0	0.0	39	

Demographic Variables		Pretest Level of Knowledge Score						N	Chi Square Test
		Inadequate		Moderate		Adequate			
		N	%	N	%	N	%		
Diet pattern	Vegetarian	6	85.7	1	14.3	0	0.0	7	$\chi 2$=0.36 P=0.54(NS)
	Non vegetarian	49	92.5	4	7.5	0	0.0	53	
Habits	Tea/coffee Drinking	55	91.7	5	8.3	0	0.0	60	$\chi 2$=0.00 P=1.00(NS)
	Consumption of Alcohol	0	0.0	0	0.0	0	0.0	0	
	Tobacco chewing	0	0.0	0	0.0	0	0.0	0	
Exercise	Often doing exercise	6	85.7	1	14.3	0	0.0	7	$\chi 2$=0.69 P=0.71(NS)
	Doing exercise daily	4	100.0	0	0.0	0	0.0	4	
	Not doing exercise	45	91.8	4	8.2	0	0.0	49	
Menstrual history	Regular	49	94.2	3	5.8	0	0.0	52	$\chi 2$=3.35 P=0.07(NS)
	Irregular	6	75.0	2	25.0	0	0.0	8	
	Attained menopause	0	0.0	0	0.0	0	0.0	0	

Table no 4.12 shows the association between pre test level of knowledge and their demographic variables. By using pearson chi square test it is calculated that there is no significant difference between the pretest level of knowledge score and the demographic value.

Table -4.13 Frequency and percentage distribution of association between post test level of knowledge and their demographic variables

Demographic variables		Posttest level of knowledge score						N	Chi square test
		Inadequate		Moderate		Adequate			
		n	%	n	%	n	%		
Age in years	25 -30 years	0	0.0	4	44.4	5	55.6	9	$\chi 2$=8.64 P=0.05*(S)
	31 -35 years	0	0.0	7	28.0	18	72.0	25	
	36 -40 years	0	0.0	1	4.5	21	95.5	22	
	41 -45 years	0	0.0	0	0.0	4	100.0	4	
Height(cm)	130-140 cm	0	0.0	3	33.3	6	66.7	9	$\chi 2$=1.63 P=0.44(NS)
	140-150 cm	0	0.0	8	19.5	33	80.5	41	
	150-160 cm	0	0.0	1	10.0	9	90.0	10	
Weight(kg)	20 -40 kg	0	0.0	3	30.0	7	70.0	10	$\chi 2$=2.70 P=0.26(NS)
	40 -60 kg	0	0.0	7	25.0	21	75.0	28	
	60 -80 kg	0	0.0	2	9.1	20	90.9	22	
Educational Qualification	Higher Secondary	0	0.0	12	25.0	36	75.0	48	$\chi 2$=6.42 P=0.04*(S)
	Diploma	0	0.0	0	0.0	9	100.0	9	
	Graduate	0	0.0	0	0.0	9	100.0	9	
Religion	Hindu	0	0.0	7	14.9	40	85.1	47	$\chi 2$=4.18 P=0.12(NS)
	Muslim	0	0.0	1	25.0	3	75.0	4	
	Christian	0	0.0	4	44.4	5	55.6	9	
Marital status	Married	0	0.0	11	20.4	43	79.6	54	$\chi 2$=0.04 P=0.83(NS)
	Unmarried	0	0.0	1	16.7	5	83.3	6	
	Widow / Divorced	0	0.0	0	0.0	0	0.0	0	
Monthly family income	<Rs. 5000	0	0.0	0	0.0	0	0.0	0	$\chi 2$=6.61 P=0.01**(S)
	Rs. 5001 – 7000	0	0.0	8	38.1	13	61.9	21	
	>Rs. 7000	0	0.0	4	10.2	35	89.8	39	

Demographic variables		Posttest level of knowledge score						N	Chi square test
		Inadequate		Moderate		Adequate			
		n	%	n	%	n	%		
Diet pattern	Vegetarian	0	0.0	1	14.3	6	85.7	7	$\chi 2$=0.16 P=0.68(NS)
	Non vegetarian	0	0.0	11	20.8	42	79.2	53	
Habits	Tea/coffee	0	0.0	12	20.0	48	80.0	60	$\chi 2$=0.00 P=1.00(NS)
	Alcohol	0	0.0	0	0.0	0	0.0	0	
	Tobacco	0	0.0	0	0.0	0	0.0	0	
Exercise	Often doing exercise	0	0.0	0	0.0	7	100.0	7	$\chi 2$=3.38 P=0.19(NS)
	Doing exercise daily	0	0.0	0	0.0	4	100.0	4	
	Not doing exercise	0	0.0	12	24.5	37	75.5	49	
Menstrual history	Regular	0	0.0	12	23.1	40	76.9	52	$\chi 2$=6.42 P=0.04*(S)
	Irregular	0	0.0	0	0.0	8	100.0	8	
	Attained menopause	0	0.0	0	0.0	0	0.0	0	

* P<0.05 significant ** P<0.01 highly significant

Table no 4.13 depicts that there was a significant association in post test level of knowledge with the selected demographic variables like elder, more education, more income and irregular menstrual history of health care personnel and there is no significant association with respect to other demographic variables. Pearson chi square test used to calculate the Statistical significance.

This table shows that these exists an association between age and post test knowledge level of respondents. Out of 22 respondents who belong to age group of 36-40 years of age 95.5%(21) belong to adequate level of knowledge in the post test. The post test scores of respondents by age are subject to x^2 test. There exists a significant association in pre

test(x^2=3.05,p=0.38) ,post test (x^2=8.64, p=0.05) between age and knowledge level of respondents

The association between education and the knowledge level in pre and post tests on prevention of osteoporosis.Out of 46 respondents who had higher secondary education 93.5% had inadequate knowledge in the pre test and 75% had adequate knowledge in the post test level of knowledge. out of 9 respondents who had diploma education 85.7% had inadequate knowledge in the pre test and 100% had adequate knowledge in the post test. Out of 9 respondents who had Graduate qualification 85.7% had inadequate knowledge in the pre test and 100% had adequate knowledge in the post test level of knowledge.

The pre-test and post-test knowledge score of respondent's educational status is subject to X2 test. There exists a significant association in pre-test(x2=0.84, P=0.65) tos post test (x^2=6.24, P=0.04) between respondent's educational status and knowledge of respondents.

The association between family income and knowledge level in pre and post tests on prevention of osteoporosis. The results are out of 39 respondents 36 who had the income of above Rs.7000 had 92.3% of inadequate and (3) 7.7% had moderate level of knowledge in the pre test and in the post test 89.8%(35) had adequate knowledge and 10.2%(4) had moderate level of knowledge on prevention of osteoporosis. The respondents who had the monthly income of Rs.5000-7000 out of 21 health care personnel 90.5%(19) had inadequate knowledge and 9.5%(2) had moderate level of knowledge in the pre test and in the post test out of 21, 61.9%(13) had adequate knowledge and 38.1%(8)had moderate level of knowledge in the post test level of knowledge on prevention of osteoporosis.

The pre-test and post-test knowledge scores of respondents by monthly income was subject to X2 test. There exists a significant

association in pre-test [X2 = 0.06, p=0.81] post test [X2 = 6.61, p= 0.01] between the monthly income and the knowledge of respondents.

The association between the menstrual history and knowledge level of respondents. In this out of 52 health care personnel who had regular menstrual history 94.2%(49) had inadequate knowledge, 5.8%(3) had moderate level of knowledge in the pre test and 76.9%(40) had adequate knowledge and 23.1%(12) had moderate level of knowledge in the post test level of knowledge on prevention of osteoporosis.

The pre-test and post-test knowledge scores of respondents by menstrual history was subject to X2 test. There exists a significant association in pre-test [X2 = 3.35, p=0.07] post test [X2 = 6.42, p= 0.04] between the menstrual history and the knowledge of respondents.

Table-4.14: Frequency and percentage distribution of association between knowledge gain score and demographic variables

Demographic Variables		N	Knowledge Gain Score						Oneway ANOVA F-Test/ T-Test
			Pretest		Posttest		Gain Score= Post-Pre		
			Mean	Sd	Mean	Sd	Mean	Sd	
Age in years	25 -30 years	9	12.56	3.28	22.12	3.82	9.56	5.64	F=2.84 P=0.04* (S)
	31 -35 years	25	12.48	2.20	23.02	4.22	10.54	4.86	
	36 -40 years	22	11.55	2.24	25.37	3.08	13.82	4.10	
	41 -45 years	4	11.00	2.45	25.00	5.35	14.00	5.53	
Height(cm)	130-140 cm	9	11.89	2.47	22.89	4.57	11.00	6.16	F=0.37 P=0.68(NS)
	140-150 cm	41	12.24	2.36	24.20	3.93	11.95	4.40	
	150-160 cm	10	11.40	2.67	24.30	3.27	12.90	4.98	
Weight(kg)	20 -40 kg	10	11.70	1.77	21.50	2.84	9.80	3.94	F=1.32 P=0.27 (NS)
	40 -60 kg	28	12.21	2.32	24.43	4.24	12.21	5.00	
	60 -80 kg	22	12.00	2.83	24.64	3.51	12.64	4.60	
Educational Qualification	Higher Secondary	48	11.89	2.38	21.94	3.94	10.05	4.06	F=3.64 P=0.03* (S)
	Diploma	9	12.43	2.23	24.42	3.25	11.99	3.35	
	Graduate	9	12.71	2.98	26.64	4.02	13.93	5.29	
Religion	Hindu	47	11.98	2.47	24.43	3.46	12.45	4.18	F=1.17 P=0.84 (NS)
	Muslim	4	12.00	3.37	27.25	1.71	15.25	4.86	
	Christian	9	12.44	1.81	20.44	4.59	8.00	5.57	
Marital status	Married	54	12.15	2.34	24.02	3.91	11.87	4.67	t=0.47 P=0.64 (NS)
	Unmarried	6	11.17	3.06	24.00	4.05	12.83	5.56	
	Widow / Divorced	0	0.00	0.00	0.00	0.00	0.00	0.00	
Monthly family income	<Rs. 5000	0	0.00	0.00	0.00	0.00	0.00	0.00	t=2.09 P=0.05* (S)
	Rs. 5001 – 7000	21	12.48	2.42	23.90	3.88	10.43	5.28	
	>Rs. 7000	39	11.82	2.40	24.08	3.94	13.26	4.45	

Demographic Variables		N	Knowledge Gain Score						Oneway ANOVA F-Test/ T-Test
			Pretest		Posttest		Gain Score= Post-Pre		
			Mean	Sd	Mean	Sd	Mean	Sd	
Diet pattern	Vegetarian	7	13.00	2.45	25.43	3.95	12.43	5.13	t=0.27 P=0.78 (NS)
	Non vegetarian	53	11.92	2.40	23.83	3.88	11.91	4.72	
Habits	Tea/coffee	60	12.05	2.41	24.02	3.89	11.97	4.73	t=0.00 P=1.00(NS)
	Alcohol	0	0.00	0.00	0.00	0.00	0.00	0.00	
	Tobacco	0	0.00	0.00	0.00	0.00	0.00	0.00	
Exercise	Often doing exercise	7	12.71	2.14	28.00	1.00	15.29	2.36	F=3.01 P=0.06 (NS)
	Doing exercise daily	4	12.50	1.29	27.25	3.50	14.75	2.63	
	Not doing exercise	49	11.92	2.52	24.18	3.72	12.27	4.86	
Menstrual history	Regular	52	12.06	2.30	22.18	3.93	10.12	4.64	t=2.06 P=0.05* (S)
	Irregular	8	12.00	3.25	25.64	3.70	13.64	4.48	
	Attained menopause	0	0.00	0.00	0.00	0.00	0.00	0.00	

* P<0.05 significant ** P<0.01 highly significant

Table no 4.14 shows the association between knowledge gain score and their demographic variables. Statistical significance was calculated using one way analysis of variance F-test and student independent t-test. Elder, more education, more income and irregular menstrual history of health care personnel are gained more knowledge score than others.

The analysis revealed that there was a significant association in knowledge gain with selected demographic variables like elder, more education, more income and irregular menstrual history . hence the stated hypothesis was accepted.

CHAPTER – V
DISCUSSION

The present study was intended to assess the effectiveness of structured teaching programme on knowledge regarding prevention of osteoporosis among health care personnel working in Rajiv Gandhi Government General Hospital, chennai-03. "A total of 60 health care personnel were selected by non probability purposive sampling technique.

A structure questionnaire was used to collect the data. A pre-experimental one-group pre-test post-test design was used to evaluate the knowledge on prevention of osteoporosis. The pretest was followed by implementation of structured teaching programme and post-test was conducted after 3 days to evaluate the effectiveness of teaching programme. The data was analyzed by using descriptive and inferential statistics.

The findings of the study are discussed under the following objectives.

1) Demographic characteristics.

2) Assessment of knowledge of health care workers on prevention of osteoporosis.

3) Evaluating the effectiveness of structured teaching programme.

4) Association between demographic variables and knowledge scores.

5) Testing of the hypothesis.

1. DEMOGRAPHIC CHARACTERISTICS

Findings of the study revealed that (42%) of the respondents belong to the age group of 31-35 years and (37%) health care workers were in the age group of 36-40 years and majority of the respondents (90%) were married. In this study it was revealed that there is a association between the age and the level of knowledge. With respect to the education 76.66% had qualification of higher secondary education, 11.67% had diploma qualification and 7(11.67%) are Graduated.

Regarding the Exercise the health care personnel 11.67% of health care personnel had the habit of often doing the exercise and 6.67% are having habit of doing exercise daily and 81.66% are not doing exercises. From this statistics data it revealed majority of them are not having the habit of regular exercise.

The findings of the study based on the objectives are:

The first objective was to assess the knowledge on prevention of osteoporosis among health care personnel.

The analysis showed that majority (91.7%) of the health care personnel had inadequate knowledge and (8.3%) of the health care personnel had moderate knowledge on prevention of osteoporosis. The overall pretest percentage of knowledge score is 40.71% among health care personnel. They are having 46.67% of maximum knowledge in the meaning,but in the prevention of osteoporosis only 38.38% of minimum knowledge is present.

The analysis of mean and standard deviation of pre test level of knowledge on prevention of osteoporosis revealed that the mean value of 12.05 with SD. It is statistically not significant.

Priyadharshini gunaseelan, Adlyne Reena Asirvatham, seshadri Varadarajan et al at 2018 conducted a cross sectional study to assess

awareness about osteoporosis among young health care providers of a community hospital using Osteoporosis Health Belief Scale (OHBS). The results found to be that Out of 154, 22 were males (14%) and ed thatfi132 were females (86%). 74% were aware about the disease and 95% identi osteoporosis affects bones. 58.5% opined that fracture would be the clinical presentation of osteoporosis. hence the knowledge of the health care providers show the importance of health education.

Hence, being a a health care personnel, we should possess adequate knowledge knowledge in preventing and management and early diagnosis of osteoporosis. So that we can give health education to the public in order to prevent the disease.

Hence in the present study the level of knowledge on prevention of osteoporosis is in adequate for the health care personnel ,the investigator's first assumption that health care personnel has inadequate knowledge on prevention of osteoporosis was accepted.

The second objective was to assess the effectiveness of the structured teaching programe in the level of knowledge towards prevention ofosteoporosis among health care personnel.

The table 4.4 shows that the majority of the health care personnel after attending the structured teaching programe 80% of health care personnel gained adequate the knowledge in preventing the osteoporosis and 20% of health care personnel gained moderate level of knowledge. On an average, in post test, after having Structure Tesching Programme, health care personnel are gained 39.90% more knowledge score than pretest score.

Shalmon S chopade, Shashikumar Jawadagi, Basheer Ahemad J Sikandar at 2018 conducted a pre experimental design to assess the effectiveness of planned teaching programme on knowledge of osteoporosis, the results shows that in the pre test the respondents had

inadequate knowledge scores in all the areas. Whereas, the post test knowledge scores were adequate. The computed 't' values (25.65) between the mean of pre test and post test was more than the critical 't' value at a level of significance of 0.05%. The result test shows that the improvement of mean knowledge score of post test when compared with lesser value of pre test.

Hence, the investigator's first hypothesis of the health care personnel will gain adequate knowledge after they attend the structured teaching program in implementing adequate knowledge in prevention of osteoporosis was accepted.

The third objective was to find the association between the level of knowledge towards prevention of osteoporosis with demographic variables.

Table 4.7 shows that there was statistically association found between the level of knowledge of health care personnel towards prevention of osteoporosis with demographic variables such as age, elder, more education, more income and irregular menstrual history of health care personnel are gained more knowledge score than others.

There exists a significant association in pre test(x^2=3.05,p=0.38) ,post test (x^2=8.64, p=0.05) between age and knowledge level of respondents and significant association in pre-test(x2=0.84, P=0.65) tos post test (x^2=6.24, P=0.04) between respondent's educational status and significant association in pre-test [X2 = 0.06, p=0.81] post test [X2 = 6.61, p= 0.01] between the monthly income and significant association in pre-test [X2 = 3.35, p=0.07] post test [X2 = 6.42, p= 0.04] between the menstrual history and the knowledge of respondents.

Hence the association between the level of knowledge scores with the demographic variables estimated by using one way analysis of variance F-test and student independent t-test shows a significant value of P<0.01 which is highly significant

CHAPTER –VI
SUMMARY, CONCLUSION, IMPLICATIONS RECOMMENDATION AND LIMITATION

6.1 SUMMARY

The objective of the study was to assess the effectiveness of structured teaching programme on knowledge about prevention of osteoporosis among health care personnel working in Rajiv Gandhi Government General Hospital, chennai.

A descriptive method was used to assess the level of knowledge among health care workers on prevention of osteoporosis. The review of literature provided the base and in dept wayh knowledge for the development of tools such as semi structured questionnaire to collect demographic data and semi structured questionnaire to assess the level of knowledge about osteoporosis disease and the ways to prevent the osteoporosis. Data was collected by interview schedule. A total of 60 health care personnel were selected from Rajiv Gandhi Government General Hospital, chennai by using non probability purposive sampling technique. The content validity of the tool on assessment of knowledge was obtained from experts and the pilot study was conducted.

The study was conducted at Rajiv Gandhi Government General Hospital, chennai. Prior permission from the Dean and the head of the institution was obtained. The health care personnel who fulfilled the inclusion criteria were selected as samples.

6.2 FINDINGS

- Majority of the health care workers(42%) were in the age group of 31-35 years and (37%) health care workers were in the age group of 36-40years.

- Majority of the health care workers (68%) were in the height of 140-150cm.
- Majority of health care workers(98%) were belongs to Hinduism.
- Majority of health care workers (78%) were belongs to higher secondary qualification.
- Majority of health care workers(90%) were married.
- Majority of the health care workers(39%) were having monthly income above Rs.7000.
- Majority of the health care workers(53%) were non vegetarian.
- Majority of the health care workers(100%) were having the habit of taking tea and coffee.
- Majority of the health care workers(81%) were not doing exercises.
- Majority of the health care workers(86%) have the regular menstrual history.

The assessment of the overall pretest level of knowledge on prevention of osteoporosis shows that majority of the health care personnel (92%) had inadequate knowledge and 8% of health care personnel ad moderate knowledge.

The assessment of the overall post test level of knowledge on prevention of osteoporosis shows that majority of the health care personnel (80%) had adequate knowledge and 20% of health care personnel had moderate knowledge after attending the structured teaching program.

There is significant differences between pretest and post test score was obtained with mean difference of 95% CI and proportion with 95%.

There is a statistically significant in improving health personnel knowledge from 12.05to 24.02 after the administration of structured teaching programme. Or we can say in pretest they are able to answer only 12 questions before administration of structured teaching programme, after STP, they are able to answer upto 24 questions. Due to structured teaching program me they are able to answer 12 more questions correctly. This difference is statistically significant.

There was a significant association found between the level of knowledge gained towards prevention of osteoporosis and demographic variables such as age, monthly income, education, menstrual cycle.

6.3 IMPLICATION

The study findings have its implication in several branches of nursing namely nursing education, nursing practice, nursing administration and nursing research.

Implication for nursing practice

- Validated forms for assessing the risk for osteoporosis can be incorporated into nursing careas a routine or early detection measure.

- Nurses can organize the community educational programs employing different media to play an important role in enhancing osteoporosis awareness.

- Nurses can organize guidance and counseling programme for a regular screening of osteoporosis in reguar intervals.

- A video teaching programme regarding life style modifications can be prepared.

- Nurses can create awareness among nurses and public regarding warning signs of osteoporosis.

Implication for nursing education

- Nurse educator can arrange regular continuing education program for all the health care personnel to update the knowledge.

- Nurse educator can encourage the health care personnel to attend various national health conference, workshops, campaigns to elaborate the knowledge regarding the prevention of osteoporosis.

Implication for nursing administration

- Nurse manager can develop and disseminate quality improvement programs to improve initiation of secondary prevention measures of osteoporosis.

- Nurse administrator can plan and organize continuing nursing education programme to educate staff nurses regarding measures to improve knowledge on prevention of osteoporosis risk factors.

- Nurse administrator can encourage the nurses to conduct research studies on various aspects of osteoporosis risk, knowledge and attitude of health care personnel towards early detection and prevention of osteoporosis.

- Nurses can create awareness among health care personnel and public regarding lifestyle modification in prevention of osteoporosis.

- Nurse administrator can involve in preparation and distribution of information booklets to create awareness to high risk patients on prevention of osteoporosis.

Implication for nursing research

- Extensive nursing research can be conducted to assess knowledge and attitude towards early detection and prevention of osteoporosis.

- Nurse researcher can explore various innovative methods to improve knowledge and attitude of patients towards early detection and prevention of

- The findings of the study should be disseminated through conferences, seminars and journal publications.

6.4 RECOMMENDATION

- A study can be conducted to assess the effectiveness of structured teaching programmes on knowledge and attitude of health care personnel towards prevention of osteoporosis.

- A study can be conducted on knowledge, attitude, practice on prevention of Osteoporosis and quality of life among health care personnel and the patients.

- A study can be conducted to compare the knowledge and attitude of male female, urban and rural health care personnel regarding early detection and prevention of osteoporosis.

- The study can be conducted on large sample to generalize findings.

- A study can be conducted to assess compliance status and reasons for non compliance to drug therapy among patients with osteoporosis.

- A study can be conducted to assess knowledge and attitude of patients towards life style modification for prevention of osteoporosis.

- A study can be conducted to explore the difficulties in adhering to life style modifications among patients with stroke.

DELIMITATIONS

- The study was confined to a small sample in a single setting which limits the study.

- Few were hesitated to involve in the study because of the education level.

- The study only assessed the knowledge but not the attitude and practice in their daily activities.

6.5 CONCLUSION

Osteoporosis is a silent killer that is increasing in significant rate in India as well as worldwide. The osteoporosis make the quality of the life to deteriorate slowly and due to the life style modifications it aggravates in the older age. Generally it is usual that lack of awareness make the people ignorant. Many studies demonstrate general lack of knowledge regarding osteoporosis risk factors and preventive behaviors.

The present study assessed the effectiveness of structured teaching programme among health care personnel on prevention of osteoporosis. The results revealed that specific education program had a significant effect in improving knowledge on the preventive behaviors of osteoporosis.

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DEMOGRAPHIC PROFILE OF HEALTH CARE PERSONNEL

PURPOSE:

This profile is used to measure the demographic variables of health care personnel such as age, height, weight, body mass index, educational qualification, dietary habits, exercise pattern and menstrual history.

INSTRUCTIONS:

Read the following items carefully and select one correct response by placing appropriate tick mark on the space provided. Please be frank in answering . it will be kept confidential and anonymity will be maintained.

1.Age in years

a. 25 – 30 years ☐

b. 31 – 35 years ☐

c. 36 – 40 years ☐

2. Height in centimeter

a. 130-140 cms ☐

b. 140-150 cms ☐

c. 150-160 cms ☐

3. Weight in kilogram.

a. 20 – 40 kgs. ☐

b. 40- 60 kgs. ☐

c. 60-80 kgs. ☐

.

4. Educational qualification
    a. Higher secondary ☐
    b. Diploma ☐
    c. Graduate ☐
5. Religion
    a. Hindu ☐
    b. Muslim ☐
    c. Christian ☐
6. Marital Status
    a. Married ☐
    b. Unmarried ☐
    c. Widow / Divorced ☐

7. Monthly Family Income
    a. Rs. 3001 – 4000 /- ☐
    b. Rs. 4001 – 5000 /- ☐
    c. > Rs.5000 /- ☐
8. Diet
    a. vegetarian ☐
    b. non vegetarian ☐
    c. Mixed ☐

9. Habits
    a. drinking tea/coffee ☐
    b. consumption of Alcohol ☐
    c. tobacco chewing ☐

10. Exercise habits.

a. Often doing exercise. ☐

b. Doing exercise daily. ☐

c. Not doing exercise. ☐

11. Menstrual history

a. regular ☐

b. irregular ☐

c. attained menopause. ☐

SEMISTRUCTURED KNOWLEDGE QUESTIONNAIRE ON PREVENTION OF OSTEOPOROSIS AMONG HEALTH CARE PERSONNEL

PURPOSE:

The semi structured interview schedule is used to collect information from health care personnel regarding the knowledge of prevention of osteoporosis.

INSTRUCTIONS:

The semi structured interview schedule consists multiple choice questions. Each containing 3 options providing information. Read the questions carefully and select one correct response by placing appropriate tick mark on the space provided. The correct response carries one mark. Please be frank in answering. It will be kept confidential and anonymity is maintained.

1. what is osteoporosis?
   - a. porosity of bones. ☐
   - b. infection of the bones. ☐
   - c. fragility of bones. ☐
2. what happens in osteoporosis?
   - a. low bone mass density ☐
   - b. low muscle density. ☐
   - c. low blood level . ☐
3. which mineral is essential for bone formation.
   - a.magnesium ☐
   - b. calcium. ☐
   - c. iron ☐

4. Osteoporosis are commonly affects whom?

a. men. ☐
b. women. ☐
c. children. ☐

5. who are the vulnerable group for osteoporosis?

a. adults. ☐
b. middle age women. ☐
c. old age women. ☐

6. Why women are highly prone to get osteoporosis ?

a. Inadequate intake of calcium. ☐
b. Physiological change and lack of exercise. ☐
c. All of the above. ☐

7. what are the risk factors for osteoporosis

a. hormonal imbalance. ☐
b. lack of exercise. ☐
c. low iron diet. ☐

8. which of the following habits more prone to get osteoporosis?

a. medicines intake ☐
b. sedentary life style. ☐
c. fasting. ☐

9. which of the following also cause osteoporosis?

a. thyroid disorder ☐
b. nerve defect. ☐
c. adrenal disorder. ☐

10. what are the minerals inadequate in diet leads to osteoporosis?

a. iron and magnesium. ☐
b. calcium and vitamin D. ☐
c. phosphorus and vitamin A. ☐

11. What is the classical symptom for osteoporosis?

a. Swelling of the joint. ☐
b. Fracture. ☐
c. Fever. ☐

12. Which is the most prone site of fracture for osteoporosis?

a. Femur fracture. ☐
b. Hip and wrist fracture. ☐
c. Fracture of the spine. ☐

13. What are the other signs for osteoporosis?

a. Low back pain. ☐
b. Fever. ☐
c. Leg swelling. ☐

14. Why the height of the individual is reduced in osteoporosis?

a. Wrist fracture. ☐
b. Femur fracture. ☐
c. Vertebral fracture ☐

15. How is bone strength measured?

a. blood test ☐
b. X-ray. ☐
c. Dexa scan. ☐

16. Which blood test is used to measure the osteoporosis?

a. calcium. ☐
b. Phosphorus. ☐
c. oxygen. ☐

17. What is the best treatment for osteoporosis?

a. Medicines . ☐
b. Exercise. ☐
c. vitamin D Supplements. ☐

18. Whch is the best and safest drug for osteoporosis?

a. Bisphosphonates. ☐
b. Augmentine. ☐
c. Metrogyl. ☐

19. What is the recommended dosage of calcium for an adult?

a. 800-1000 mg daily ☐
b. 2000 -3000mg daily. ☐
c. 5000 mg daily. ☐

20. How much glasses of milk is recommended for calcium intake?

a. 3 or more glasses. ☐
b. 2 glasses. ☐
c. 1 glasses. ☐

21. What are the other treatment for osteoporosis ?

☐
a. Physiotherapy. ☐
b. Antibiotics.
c. Hormone replacement therapy. ☐

22. What type of diet helps in preventing osteoporosis?

a. zinc. ☐
b. selenium. ☐
c. Calcium rich diet. ☐

23. which of the following diet is rich in calcium ?

a. Sea foods. ☐
b. Green leafy vegetables. ☐
c. Milk. ☐

24. Which of the following is rich in vitamin D ?

a. sunlight. ☐
b. carrot. ☐
c. meat. ☐

25. How many days we have to do exercise to prevent osteoporosis?

a. every day. ☐
b. alternate days. ☐
c. weekly once. ☐

26. How do you prevent slippery of floors?

a. Wearing shoes. ☐
b. Minimizing walking. ☐
c. Slippery floors covered with rugs ☐

27. How osteoporosis can be prevented ?

a. Medications ☐
b. Well balanced diet. ☐
c. life style modifications ☐

28. What type of exercises are used to prevent osteoporosis?

a. Weight bearing exercise. ☐
b. Balance exercises. ☐
c. Flexibility exercises. ☐

29. Which of the following activities is the best way to reduce a person's chance of getting osteoporosis?

a. swimming ☐
b. walking briskly. ☐
c. stretching. ☐

30. What are the complications of osteoporosis ?

a. Abdomen pain. ☐

b. Accident. ☐

c. Bone Fractures ☐

KEY ANSWERS FOR THE QUESTIONS :

1. A
2. A
3. B
4. B
5. C
6. C
7. A
8. C
9. A
10. B
11. B
12. A
13. A
14. C
15. C
16. A
17. A
18. A
19. A
20. A
21. C
22. C
23. C
24. A
25. A
26. A
27. C
28. A
29. B
30. C

சுகாதார ஊழியர்களுக்கான டெமோராபிக் சுயவிவரம்

நோக்கம்:

வயது, உயரம், எடை, உடல் நிறை குறியீட்டெண், கல்வித் தகுதி, உணவு பழக்கம், உடற்பயிற்சி முறை மற்றும் மாதவிடாய் வரலாறு போன்ற உடல்நலப் பணியாளர்களின் மக்கள்தொகை மாறுபாடுகளை அளவிடுவதற்கு இந்த சுயவிவரம் பயன்படுகிறது.

வழிமுறைகள்:

பின்வரும் உருப்படிகளை கவனமாக படித்து, வழங்கப்பட்ட இடத்தில் பொருத்தமான டிக் குறியை வைப்பதன் மூலம் ஒரு சரியான பதிலைத் தேர்ந்தெடுக்கவும். தயவுசெய்து பதில் சொல்லுங்கள். அது இரகசியமாக வைக்கப்படும்.

1. **வயது ஆண்டுகளில்.**

   25 - 30 **ஆண்டுகள்.**
   31 - 35 **ஆண்டுகள்.**
   36 - 40 **ஆண்டுகள்.**
   41 - 45 **ஆண்டுகள்**
2. **உயரம் சென்டிமீட்டர்**

   130-140 செ.மீ.
   140-150 செ.மீ.
   150-160 செ.மீ.
3. **எடை. கிலோகிராம்**

   20 - 40 கிலோ. .
   40-60 கிலோ .
   60-80 கிலோ
4. **உடல் நிறை குறியீட்டு**
   20 க்கும் குறைவாக.
   20-25.
   20 க்கும் மேற்பட்ட
5. **கல்வி தகுதி**
   a. **மேல்நிலை . .**
   b. **டிப்ளமோ**
   c. **பட்டதாரி**
6. **மதம்**
   a.. **இந்து மதம்.**
   b. **முஸ்லீம்.**
   c. **கிரிஸ்துவர்.**

7. திருமண நிலை

a. திருமணமானவர்.
b. திருமணமாகாத.
c. விதவை / விவாகரத்து

8. மாதாந்த குடும்ப வருமானம்

a. ரூ. 3001 - 4000 / -.
b.. ரூ. 4001 - 5000 / -.
c. > ரூ .5000 / -.

9. உணவு

a. சைவம்.
b. சைவ உணவு இல்லை.
c கலப்பு

10. பழக்கங்கள்

a. காபி அல்லது டி குடிப்பது.
b. வெத்தலை .
c. புகையிலை.

11. உடற்பயிற்சி பழக்கங்கள்.

a. பெரும்பாலும் உடற்பயிற்சி செய்வது. .
b. தினசரி உடற்பயிற்சி செய்வது. .
c. உடற்பயிற்சி செய்யவில்லை. .

12. மாதவிடாய் விவரங்கள்

a. வழக்கமான .
b. ஒழுங்கற்ற .
c. மாதவிடாய் அடைந்தது.

சுகாதாரப் பணியாளர்களிடையே (ஆஸ்டியோபோரோசிஸ்)எலும்புப்புரை தடுப்பு பற்றிய அரை கட்டமைக்கப்பட்ட அறிவு கேள்வித்தாள்

நோக்கம்:

செம்மைப்படுத்தப்பட்ட நேர் **முகக் காணல் படிவம்** ஆஸ்டியோபோரோசிஸ் தடுப்பு அறிவைப் பற்றிய சுகாதார பராமரிப்பு **பணியாளர்களிடமிருந்து** தகவல் சேகரிக்கப் பயன்படுகிறது.

அறிவுறுத்தல்கள்:

செம்மைப்படுத்தப்பட்ட நேர்காணல் அட்டவணையில் பல தேர்வுகள் உள்ளன. ஒவ்வொரு உள்ளடக்கம் 3 தகவலை வழங்கும். கேள்விகளை கவனமாக படித்து, வழங்கப்பட்ட இடத்தில் பொருத்தமான டிக் குறி வைப்பதன் மூலம் ஒரு சரியான பதிலைத் தேர்ந்தெடுக்கவும். சரியான பதிலை ஒரு மதிப்பெண் வைத்திருக்கிறது. பதிலளிப்பதில் கூர்மையாக இருக்க வேண்டும். அது இரகசியமாக வைக்கப்படும் மற்றும் தெரியாமல் பராமரிக்கப்படும்.

1. எலும்புப்புரை என்றால் என்ன?
   a. எலும்புகளின் பலவீனம்
   . எலும்புகளின் சதை
   . எலும்புகள் தொற்று.

2. எப்படி எலும்புப்புரை ஏற்படுகிறது?
   a. குறைந்த எலும்பு வெகுஜன அடர்த்தி
   . குறைந்த தசை அடர்த்தி
   . குறைந்த இரத்த நிலை.

3. எலும்பு உருவாவதற்கு **எந்த கனிமம்** அவசியம்?
   . மெக்னீசியம்
   . கால்சியம்
   . இரும்பு தாது

4.. யார் ஆஸ்டியோபோரோசிஸால் பொதுவாகப் பாதிக்கப்படுபவர்கள்?
   . ஆண்கள்
   . பெண்கள்
   . குழந்தைகள்.

5. யார் ஆஸ்டியோபோரோசிஸ்க்கு **அதிகமாக** பாதிக்கப்படக்கூடிய குழு?
   . பெண்கள்.
   . நடுத்தர வயது பெண்கள்.
   . வயதான பெண்கள்.

6. ஏன் பெண்கள் எலும்புப்புரைக்கு மிகவும் பாதிக்கப்படுகின்றனர்?
   a. கால்சியம் குறைவான உட்கொள்ளல்.
   . உடலியல் மாற்றம் மற்றும் உடற்பயிற்சி **இல்லாததால்**
   c. மேலே சொன்னது எல்லாம்

7. ஆஸ்டியோபோரோசிஸ் ஆபத்து காரணிகள் என்ன?

- . ஹார்மோன் சமநிலையின்மை
- . உடற்பயிற்சி இல்லாதது
- . குறைந்த இரும்பு **சத்து மிக்க** உணவு.

8. பின்வரும் பழக்கங்களில் எது ஆஸ்டியோபோரோசிஸ் வருவதற்க்கு **அதிக** வாய்ப்பு கொண்டுள்ளது?

- a. மருந்துகள் உட்கொள்ளல்
- . உடல் உழைப்பு இல்லாத வாழ்க்கை பாணி.
- . உண்ணாவிரதம் இருப்பது.

9. பின்வருவனவற்றில் ஆஸ்டியோபோரோசிஸ்க்கு மற்ற காரணங்களாக கருதப்படுவது எது?

- a. **தைராய்டு கோளாறு**
- b. **நரம்பு குறைபாடு**
- c. **அட்ரீனல் கோளாறு**

10. உணவில் போதுமான அளவிலான கனிமங்கள் எவை எலும்புப்புரைக்கு வழிவகுக்கிறது?

- a. இரும்பு தாது மற்றும் மெக்னீசியம்
- b. கால்சியம் மற்றும் வைட்டமின் d போதுமானதாக இல்லை
- c. பாஸ்பரஸ் மற்றும் வைட்டமின்

11. ஆஸ்டியோபோரோசிஸ்க்கு முக்கியமான அறிகுறி என்ன?

- a. **மூட்டு** வீக்கம்
- . எலும்பு முறிவு
- . காய்ச்சல்

12. **ஆடிஸ்யோபோசஸ்சினால் உடம்பிலுள்ள எந்த எலும்பு அதிகம் பாதிக்கப்படும்?**

- a. தொடை எலும்பு
- b. இடுப்பு மற்றும் மணிக்கட்டு
- c. **முதுகுதண்டு**

13. ஆஸ்டியோபோரோசிஸ்க்கு மற்ற அறிகுறிகள் என்ன?

- . இடுப்பு வலி
- . காய்ச்சல்
- . கால் வீக்கம்

14. தனிமனிதரின் உயரம் ஆஸ்டியோபோரோசிஸில் ஏன் குறைக்கப்படுகிறது

- a. முதுகெலும்பு முறிவு
- . எலும்பு முறிவு
- . மணிக்கட்டு முறிவு

15. ஆஸ்டியோபோரோசிஸைப் பற்றி ஆராய்வதற்கு கீழ்க்கண்டவற்றில் எது பயன்படுத்தப்படுகிறது?

a. இரத்த சோதனைகள்

. எக்ஸ்-ரே

c. DEXA ஸ்கேன்

16. ஆஸ்டியோபோரோசிஸை அளவிட எந்த இரத்த சோதனை பயன்படுத்தப்படுகிறது?

a. கால்சியம்

b. பாஸ்பரஸ்

. ஆக்ஸிஜன்.

17. கண்டறியப்பட்ட ஆஸ்டியோபோரோசிஸ்க்கு பிறகு சிறந்த சிகிச்சை என்ன?

a. மருந்துகள்

. உடற்பயிற்சி

. துணை மருந்துகள்.

18. ஆஸ்டியோபோரோசிஸ்க்கு பாதுகாப்பான மருந்து எது?

a. பிஸ்ஃபோஸ்ஃபோனேட்டுடனும்

. மெட்ரோனிடஜோல்

. வலி நிவாரணிகள்

19. பெரியவர்களுக்கான தினசரி பரிந்துரைக்கப்பட்ட கால்சியம் அளவு எவ்வளவு ஆகும்?

. தினசரி 800-1000 மி.கி.

. தினசரி 2000-3000 மி.கி

. தினசரி 5000 மி.கி.

20. **பரிந்துரைக்கப்பட்ட கால்சியம் உட்கொள்ளலை சந்திக்க எத்தனை** டம்பளர் **பால் குடிக்க வேண்டும்?**

a. 3 அல்லது அதற்கு மேற்பட்ட

b. 2 **டம்பளர்**

c. 1 **டம்பளர்**

21. ஆஸ்டியோபோரோசிஸ் மற்ற சிகிச்சை என்ன?

. பிசியோதெரபி

. ஆண்டிபயாடிக் மருந்துகள்

. ஹார்மோன் மாற்று சிகிச்சை

22. ஆஸ்டியோபோரோசிஸ் தடுக்கும் உணவு வகை என்ன?

. துத்தநாகம்

. செலினியம்

. கால்சியம் நிறைந்த உணவு

23. பின்வரும் உணவுகளில் கால்சியம் நிறைந்திருக்கும் உணவு எது?

a. மீன்

b. கீரை வகை

c. பால்.

24. பின்வருவனவற்றில் எதில் வைட்டமின் **டி** நிறைந்துள்ளது?

- . சூரிய ஒளி
- . கேரட்
- . இறைச்சி

25.. ஆஸ்டியோபோரோசிஸ் தடுக்கும் உடற்பயிற்சி எத்தனை நாட்களுக்கு நாம் செய்ய வேண்டும்?

- . தினமும்
- . மாற்று நாட்கள்
- . வாரத்திற்கு ஒருமுறை.

26 . எப்படி முறிவு வழுக்கும் தரையில் இருந்து தடுக்க முடியும்

- a. பிடிப்பு நிறைந்த காலணிகள் அணிந்து கொள்வதால்
- b. நன்கு சீரான உணவு
- c. நடப்பதை தவிப்பர்பதால்.

27. எப்படி ஆஸ்டியோபோரோசிஸ்றை தடுக்க முடியும்?

- . மருந்துகள்
- . நன்கு சீரான உணவு
- c. வாழ்க்கை பாணி மாற்றம் .

28. ஆஸ்டியோபோரோசிஸ் தடுக்கும் பயிற்சிகள் என்ன?

- a. எடை தாங்கும் பயிற்சிகள்
- . இருப்பு பயிற்சிகள்
- . நெகிழ்வு பயிற்சிகள்.

29. பின்வரும் நடவடிக்கைகளில் எது ஆஸ்டியோபோரோசிஸ் பெறுவதற்கான வாய்ப்புக□ள் குறைக்க சிறந்த வழி

- a. நீச்சல்
- . நடைபயிற்சி
- . நீட்சி

30. ஆஸ்டியோபோரோசிஸின் சிக்கல்கள் என்ன என்ன?

- . எலும்பு முறிவு
- . விபத்து
- . வயிற்று வலி

ஆஸ்டியோபோரோசிஸ் தடுப்பு முறைகள்

ஸ்டியோபோரோசிஸ் உங்கள் உடலில் உள்ள எலும்பு அமைப்புகளை பலவீனப்படுத்த வழிவகுக்கும் மருத்துவ நிலை. எலும்புக்கூடு "எலும்புக்கூடு என்றும் அழைக்கப்படுகிறது", எலும்புப்புரை எலும்பு மிகவும் வலுவற்றது மற்றும் உடைந்த எலும்புகளை உறிஞ்சுவதற்கான வாய்ப்பு அதிகரிக்கிறது. எலும்பானது ஒரு தேன்-வடிவ வடிவத்தைக் கொண்டிருக்கிறது, ஒரு தேன்கூடு போன்றது.

உடைந்த எலும்புகள் ஒரு தீவிர பிரச்சனையாக இருக்கலாம்; இந்த முறிவுகள் சில எளிய சிகிச்சைகள் மூலம் நிர்வகிக்க முடியும், மற்றவர்கள் அறுவை சிகிச்சை தேவை மற்றும் நீண்ட கால மறுவாழ்வு தேவைப்படலாம். இந்த கவலைகள் காரணமாக, ஆஸ்டியோபோரோசிஸின் வளர்ச்சிக்கும், ஆஸ்டியோபோரோசிஸ் வளர்ச்சிக்கும் அல்லது முன்னேற்றத்திற்கும் அவர்கள் என்ன நடவடிக்கை எடுக்கலாம் என்பதை எல்லோரும் புரிந்து கொள்ள வேண்டும்.

வளரும் ஆஸ்டியோபோரோசிஸ் மிகவும் பொதுவான ஆபத்து காரணிகள் பின்வருமாறு:

பெண் பாலினம்

கௌகேசிய இனம்

மேம்பட்ட வயது

மெல்லிய கட்டி அல்லது நியாயமான தோல்

ஏழை ஊட்டச்சத்து

புகையிலை பயன்பாடு

சில குறிப்பிட்ட மருந்துகள் (எ.கா. ஸ்டெராய்டுகள்)

சில மருத்துவ நிலைமைகள் (எ.கா. தைராய்டு இயல்புநிலைகள்)

LESSON PLAN ON PREVENTION OF OSTEOPOROSIS

NAME OF THE TOPIC	:	PREVENTION OF OSTEOPOROSIS
DURATION	:	45 MINITUS
GROUP AND NUMBER	:	FEMALE HEALTH CARE WORKERS WORKING INALL THE WARDS
PLACE	:	RGGGH, CHENNAI-3
METHODS OF TEACHING	:	LECTURER CUM DISCUSSION AND DEMONSTRATION
MEDIUM OF INSTRUCTION	:	TAMIL
TEACHING AIDS	:	POWER POINT, BOOKLET, PAMPHLETS

S.NO	TIME	SPECIFIC OBJECTIVES	CONTENT	RESEARCHER ACTIVITY	A.V. AIDS	EVALUATION
1.	2 min	Introducing the topic.	Osteoporosis is the most type of bone disease and affects both men and women. The condition is characterized by low bone mass, loss of bone architecture and reduced bone strength. Because people with Osteoporosis have "brittle" bones, they are at increase risk for developing fractures.	explaining		
2.	2 min	Health care personnel are able to define the definition of osteoporosis.	MEANING: osteoporosis means porous bone. DEFINITION: Osteoporosis is a condition in which the bone matrix is lost, thereby weakening the bones and making them more susceptibleto fracture.	explaining	charts.	Asking questions and clarifying the doubts.
3.	2 min	Health care personnel will be able to state the incidence of osteoporosis.	INCIDENCE: About 15% of **white people** in their 50s and 70% of those over 80 are affected. It is more common in women than men.[3] In the **developed world**, depending on the method of diagnosis, 2% to 8% of males and 9% to 38% of females are affected.	explaining	charts	Asking questions and clarifying the doubts.

S.NO	TIME	SPECIFIC OBJECTIVES	CONTENT	RESEARCHER ACIVITY	A.V. AIDS	EVALUATION
4.	8 min	Health care personnel will be able to enlist the etiological and risk factor	Risk factors: Osteoporosis is categorized as either primary and secondary. Some risk factors for primary osteoporosis can be controlled but others cannot. Not controllable risk factors: ꕥ Female gender. ꕥ Aging. ꕥ Asian race. ꕥ Small round petite body build. ꕥ Post menopausal status. ꕥ Low testosterone and estrogen in men. ꕥ Family history of osteoporosis or fractures. ꕥ History of fractures. Risk factors related to lifestyle that are controllable : ꕥ Cigarette smoking. ꕥ Excessive alcohol consumption. ꕥ Anorexia nervosa. ꕥ Nutrition: low calcium or vitamin D intake, excessive caffeine, protein or sodium intake. ꕥ sedentary life style. Secondary osteoporosis causes: ❋ hyperparathyroidism. ❋ Renal dialysis.	explaining	charts	Asking questions and clarifying the doubts.

S.NO	TIME	SPECIFIC OBJECTIVES	CONTENT	RESEARCHER ACTIVITY	A.V. AIDS	EVALUATION
		Contd.,	Drug theraphy with steroids. ❋ Certain antiseizure drugs. ❋ Sleeping medications. ❋ Aluminium containing antacids. ❋ Hormones for endometriosis. ❋ Cancer drugs. ❋ Prolonged immobility. ETIOLOGY: Osteoporosis is an imbalance between bone resorption and bone formation. The three main mechanism by which osteoporosis develops are an inadequate peak bone mass, excessive bone resorption and inadequate formation of new bone during remodeling. An interplay of these mechanisms underlies the development of fragile bone tissues.	explaining	charts	Asking questions and clarifying the doubts.

S.NO	TIME	SPECIFIC OBJECTIVES	CONTENT	RESEARCHER ACTIVITY	A.V. AIDS	EVALUATION
5.	8 min	Health care personnel Will be able to describe the clinical factors.	CLINICAL FACTORS: Osteoporosis is called as " silent killers" because bone loss occur without symptoms. Most people do not realize they haveosteoporosisuntil they fracture a bone falling, sustaining a mild bump or sneezing. Vertebral compression fractures. Severe back pain. The classic DOWAGER'S hump or kyphosis of the spine is present as the spine begins to collapse. ▪ Bone deformities. ▪ Functional disabilities and activities of daily living may be limited. ▪ Emotional effects can be relate to body image changes, ▪ Depression, ▪ Anxiety from fear of breaking a bone including during intimacy. ▪ Socialization may be reduced because of activity limitations or fear of injury.	explaining	charts	Asking questions and clarifying the doubts.

S.NO	TIME	SPECIFIC OBJECTIVES	CONTENT	RESEARCHER ACTIVITY	A.V. AIDS	EVALUATION
6.	5 min	Working women will be enumerate the diagnostic assessment.	DIAGNOSTIC EVALUATION: Diagnosis of osteoporosis includes - History and physical examination. - Bone mineral densitometry. - Serum calcium, phosphorus and alkaline phosphatase levels. - DEXA (dual energy x- ray absorptiometry.	explaining	charts	Asking questions and clarifying the doubts.
7.	2 min	Working women will be able to discuss the complications	It measures bone density in the spine, hip and fore arm. Also useful to evaluate to assess the effectives of treatment. COMPLICATIONS: Fracture is the main one. The common site of fracture are 1.vertebral fractures. 2.Hip fractures. 3. death may also occur.	explaining	charts	Asking questions and clarifying the doubts.

S.NO	TIME	SPECIFIC OBJECTIVES	CONTENT	RESEARCHER ACTIVITY	A.V. AIDS	EVALUATION
8.	10 min	Health care personnel will be able to explain the measures to prevent osteoporosis.	PREVENTION OF OSTEOPOROSIS: Osteoporosis is a major public health problem. prevention is thus the preferred approach. Prevention consists of dietary and lifestyle alterations, primarily increases in calcium intake and exercise. . PRIMARY PREVENTION: 1. Physical activity. Exercise may decrease fracture risk by improving bone mass in premenopausal women and helping to maintain bone density for women after menopause. The physical activity reduces the risk of hip fracture in older women as a result of increased muscle strength. Most experts recommend exercising for at least 30 minutes three times per week. 2. Proper nutrition An optimal diet for preventing or treating osteoporosis includes consuming an adequate number of protein and calories as well as optimal amounts of calcium and vitamin D, which are essential in helping to maintain proper bone formation and density.	explaining	charts	Asking questions and clarifying the doubts.

S.NO	TIME	SPECIFIC OBJECTIVES	CONTENT	RESEARCHER ACTIVITY	A.V. AIDS	EVALUATION
		Contd.,	Women and men consume at least 1000mg of calcium per day; this includes calcium in foods and beverages plus calcium supplements. Postmenopausal women should consume 1200 mg of calcium per day (total of diet plus supplements). The main dietary sources of calcium include milk and other dairy products, such as cottage cheese, yogurt, or hard cheese and green vegetables, such as kale and broccoli. A rough method of estimating dietary calcium intake is to multiply the number of dairy servings consumed each day by 300 mg. One serving is 8 oz of milk (236 mL) or yogurt (224 g), 1 oz (28 g) of hard cheese, or 16 oz (448 g) of cottage cheese. 3. Calcium intake: Calcium supplements (calcium carbonate or calcium citrate) may be suggested for women who cannot get enough calcium in their diet. Supplemental calcium doses greater than 500 mg/day should be taken in divided doses.	explaining	charts	Asking questions and clarifying the doubts.

S.NO	TIME	SPECIFIC OBJECTIVES	CONTENT	RESEARCHER ACTIVITY	A.V. AIDS	EVALUATION
		Contd.,	**4.** Vitamin D intake: Milk supplemented with vitamin D is a primary dietary source of dietary vitamin D; it contains approximately 100 international units per (236 mL). **5.** Protein supplements: Protein supplements may be recommended in some people to ensure sufficient protein intake. This may be particularly important for those who have already had an osteoporotic fracture **6.** Alcohol, caffeine, and salt intake : Drinking alcohol excessively (more than two drinks a day) can increase the risk of fracture due to an increased risk of falling, poor nutrition, etc, so it should be avoided. **7.** Smoking: Stopping smoking is strongly recommended for bone health because smoking cigarettes is known to speed bone loss.	explaining	charts	Asking questions and clarifying the doubts.

S.NO	TIME	SPECIFIC OBJECTIVES	CONTENT	RESEARCHER ACTIVITY	A.V.AIDS	EVALUATION
		Contd.,	**8.** Falls : Falling significantly increases the risk of osteoporotic fractures in older adults. Taking measures to prevent falls can decrease the risk ▪ Removing loose rugs and electrical cords or any other loose items in the home that could lead to tripping, slipping, and falling. ▪ Providing adequate lighting in all areas inside and around the home, including stairwells and entrance ways. ▪ Avoiding walking on slippery surfaces, such as ice or wet or polished floors. ▪ Avoiding walking in unfamiliar areas outside.	explaining	charts	Asking questions and clarifying the doubts.

S.NO	TIME	SPECIFIC OBJECTIVES	CONTENT	RESEARCHER ACTIVITY	A.V.AIDS	EVALUATION
9.	4 min	Health care personnel will be able to describe the medical management.	MEDICAL MANAGEMENT: The goals of treatment are to reduce bone loss and prevent further fracture 1.HORMONE REPLACEMENT THERAPHY Estrogen replacement therapy has been proved effective in the prevention of osteoporosis. It maintains a positive calcium balance by decreasing the bone remodeling rate. This therapy is most effective in preventing osteoporosis. 2.PHYSICAL THERAPHY: It is the most important long term treatment for osteoporosis. A long term physical activity program should include weight bearing exercises such as walking, jagging, increases the flexibility and strengthening of the muscles in preventing the complications of osteoporosis.	explaining	charts	Asking questions and clarifying the doubts.

S.NO	TIME	SPECIFIC OBJECTIVES	CONTENT	RESEARCHER ACTIVITY	A.V. AIDS	EVALUATION
10.	2 min	Concluding the topic.	CONCLUSION: Osteoporosis is a disease where increased bone weakness increases the risk of a broken bone. It is the most common reason for a broken bone among the elderly. Bones that commonly break include the back bones, the bones of the forearm, and the hip.	explaining	charts	Asking questions and clarifying the doubts.

திட்டமிட்ட போதனை படிவம்

தலைப்பு	:	எலும்பு தேய்மானம் பற்றிய சிகிச்சை மற்றும் தடுப்பு முறைகள்
குழு	:	அரசு சுகாதாரப் பணியாளர்கள்
இடம்	:	ராஜீவ் காந்தி அரசு பொது மருத்துவமனை, சென்னை.
நேரம்	:	45 நிமிடங்கள்
கற்பித்தல் முறை	:	விரிவுரை மற்றும் கலந்துரையாடல்
உதவிப்பொருள்	:	கணினி விளக்கப்படம், அட்டவணைகள், சார்ட்

மத்திய குறிக்கோள்

பெண்கள் பாதிப்படையும் எலும்பு தேய்மானத்தை பற்றியும், அவற்றை தடுக்கும் முறைகள் பற்றியும் தெரிந்துகொள்ள அறிவு மற்றும் மனப்பாங்கினை மேம்படுத்துதல்.

துணை குறிக்கோள்கள்

திட்டமிட்ட சோதனைக்குப்பின் துணை செவிலியர்கள் கீழ்கண்ட திறனைப் பெற வேண்டும்.

- அறிமுகமாதல்
- எலும்பு தேய்மானம் பற்றி வரையறுக்க வேண்டும்.
- நோய் குறியை எலும்பு தேய்மானத்திற்கான காரணங்கள் மற்றும் காரணிகளை வரிசைப்படுத்த வேண்டும்.
- எலும்பு தேயமானத்திற்கான அறிகுறிகள் மற்றும் கண்டறியும் முறைகளைப் பற்றி எடுத்துக்கூற வேண்டும்.
- எலும்பு தேய்மானத்திற்கான சிகிச்சை முறைகளை பற்றி விளக்கி கூற வேண்டும்.
- தடுக்கும் முறைகளை பற்றி எடுத்துக்கூற வேண்டும்.

வ. எண்	நேரம்	குறிப்பான நோக்கங்கள்	பொருளடக்கம்	ஆராய்ச்சியாளர் செயல்	மாதிரிகளின் செயல்கள்	ஒலி, ஒளி சார் உபகரணங்கள்	மதிப்பீடு
1.	2 நிமி	அறிமுகமாதல்	**அறிமுகம்** என் ஜெயர் ஜே.நான்சி. நான் செவிலியர் கல்லூரி, சென்னை மருத்துவக் கல்லூரியில் முதுநிலை செவிலியர் இரண்டாமாண்டு படிக்கிறேன். இன்று பெண்கள் எலும்பு தேய்மானத்தால் பாதிப்படைவதை பற்றியும், சிகிச்சை மற்றும் தடுப்பு முறைகள் பற்றியும் இன்னும் கூடுதலாக தெரிந்து கொள்ள நாம் இங்கே கூடி வந்துள்ளோம். இன்றைய காலகட்டத்தில் பெண்கள் போதுமான கால்சியம் நிறைந்த உணவுகள் உட்கொள்வது கிடையாது. இதனால் எலும்பு தேய்மானத்தினால் பெணகள் அதிகளவில் பாதிக்கப்படுகின்றனர். பின்வரும் விதிமுறைகளையும் தடுப்பு முறைகளையும் பின்பற்றினால் எலும்பு தேய்மானத்தில் இருந்து தடுக்கலாம்.	விவரித்தல்	கவனித்தல்	வண்ணப்பட ஒளி அட்டை	

வ. எண்	நேரம்	குறிப்பான நோக்கங்கள்	பொருளடக்கம்	ஆராய்ச்சியாளர் செயல்	மாதிரிகளின் செயல்கள்	ஒலி, ஒளி சார் உபகரணங்கள்	மதிப்பீடு
2.	4 நிமி	எலும்பு தேய்மானம் பற்றி வரையறுக்க வேண்டும்	**எலும்பு தேய்மானம்** எலும்பு தேய்மானம் என்பது உடலில் ஏற்படும் வளர்சிதை மாற்றத்தினால் எலும்பின் வலு குறைந்து அதன் அமைப்பில் மாற்றம் ஏற்பட்டு எலும்பில் ஏற்படுவதேயாகும். **நிகழ்வுகள்** ஆண்களை ஒப்பிடும்போது பெண்களுக்கு 8 முறை அதிகமாக ஏற்படுகிறது. 50 வயதடையந்த 40 மில்லியன் அமெரிக்கர்கள் இந்நோயினால் பாதிக்கப்படுகின்றனர். உலகளவில் 8.9 மில்லியன் எலும்பு முறிவு ஒவ்வொரு நிமிடமும் ஏற்படுகிறது. 20 சதவீதம் இதில் பெண்கள் பாதிக்கப் படுகின்றனர். உலகளவில் 200 மில்லியன் பெண்கள் எலும்பு தேய்மானத்தினால் பாதிக்கப் படுகின்றனர். இதில் 1/10 பெண்கள் 70 வயதிற்கு மேற்பட்டவர்கள். 1/5 பெண்கள் 70 வயதினர். 2/5 பெண்கள் 80 வயதினர் மற்றும் 2/3 பெண்கள் 90 வயதினர்.	விவரித்தல்	கவனித்தல்	வண்ணப்பட ஒளி அட்டை	

வ. எண்	நேரம்	குறிப்பான நோக்கங்கள்	பொருளடக்கம்	ஆராய்ச்சியாளர் செயல்	மாதிரிகளின் செயல்கள்	ஒலி, ஒளி சார் உபகரணங்கள்	மதிப்பீடு
			வெள்ளை இனத்தவர்கள் அதிகமாக பாதிப்படைகின்றனர். எலும்பு தேய்மானம் 8 முறை ஆண்களை விட பெண்களுக்கு அதிகமாக ஏற்படுவதற்கான காரணங்களாவன. • பெண்கள் அன்றாட உணவில் குறைவான கால்சியம் எடுத்துக்கொள்கின்றனர். • பெண்களின் குறுகிய உடலமைப்பில் எலும்பின் அடர்த்தி குறைவு. • எலும்பின் வளர்ச்சி இளம் வயதிலேயே நடப்பதால் மாதவிலக்கின்போது பிரச்சனைக்கு உள்ளாகின்றனர். • கர்ப்பம் தரித்தல் மற்றும் தாய்ப்பால் ஊட்டுதல் பெண்களுக்கு கால்சியத்தின் அவசியம் அதிகமாகிறது. • வயதில் முதிர்ச்சியே எலும்பு தேய்மானத்திற்கு முக்கிய காரணமாக திகழ்கிறது.				

வ. எண்	நேரம்	குறிப்பான நோக்கங்கள்	பொருளடக்கம்	ஆராய்ச்சியாளர் செயல்	மாதிரிகளின் செயல்கள்	ஒலி, ஒளி சார் உபகரணங்கள்	மதிப்பீடு
3.	2 நிமி	நிகழ்வுகள் மற்றும் எலும்பு தேய்மானத் திற்கான காரணங்களை வரிசைப்படுத்த வேண்டும்.	**<u>காரணிகள்</u>** • பெண்கள் • அதிக வயது/ வயதில் முதிர்ச்சி • அறுவை சிகிச்சை (கர்ப்பப்பை நீக்கம்) • குறைந்த எலுமபின் நிறை • குறிப்பிட்ட நோய்கள் மற்றும் வலிப்பு மாத்திரைகள் உட்கொள்வதால் குறைந்த டெஸ்டோரோஸ்ரான் மற்றும் ஈஸ்ட்ரோஜன் • இனம் • விளையாட்டு வீரங்கனைகள் (அதிக உடற்பயிற்சியினால் ஈஸ்ட்ரோஜன் குறைதல்) • நாளமில்லா சுரப்பிகளின் பிரச்சனைகள்	விவரித்தல்	கவனித்தல்	வண்ணப்பட ஒளி அட்டை	

வ. எண்	நேரம்	குறிப்பான நோக்கங்கள்	பொருளடக்கம்	ஆராய்ச்சியாளர் செயல்	மாதிரிகளின் செயல்கள்	ஒலி, ஒளி சார் உபகரணங்கள்	மதிப்பீடு
4.	3 நிமி	எலும்பு தேயமானத் திற்கான அறிகுறிகள் மற்றும் கண்டறியும் முறைகளைப் பற்றி எடுத்துக்கூற வேண்டும்.	**அறிகுறிகள்** • எலும்பு தேய்மானம் வலுவிழந்த எலும்பினால் முறிவு மற்றும் தண்டுவட முறிவு ஏற்படுதல். • இதயத்தின் செயல்பாடு குறைந்து நெஞ்சு படபடப்பு, இதயத்துடிப்பு, கொழுப்பின் அளவு அதிகமாதல். • உளவியல் ரீதியான பிரச்சனைகள், தூக்கமின்மை, எரிந்து விழுதல், கவலை, மறதி, பயம் மற்றும் மன அழுத்தம் போன்றவை ஏற்படுகிறது. **கண்டறியும் முறைகள்** • ஹார்மோன் பரிசோதனை– ஈஸ்ட்ரோஜன் லூட்டினைசிங் ஹார்மோன் அளவை பரிசோதித்தல்.	விவரித்தல்	கவனித்தல்	வண்ணப்பட ஒளி அட்டை	

வ. எண்	நேரம்	குறிப்பான நோக்கங்கள்	பொருளடக்கம்	ஆராய்ச்சியாளர் செயல்	மாதிரிகளின் செயல்கள்	ஒலி, ஒளி சார் உபகரணங்கள்	மதிப்பீடு
5.	2 நிமி	எலும்பு தேய்மானத்திற்கான சிகிச்சை முறைகளை பற்றி விளக்கி கூற வேண்டும்.	**சிகிச்சை முறை** • ஈஸ்ட்ரோஜன் ஹார்மோன் ஊசிபோடுவதால் எலும்பு தேய்மானத்தினால் ஏற்படும் அறிகுறிகளை குறைக்கலாம். • வைட்டமின்-ஈ மற்றும் வைட்டமின் பி மாத்திரைகளை உட்கொள்ளுதல் கால்சியம் நிறைந்த உணவுப்பொருட்கள் மற்றும் மாத்திரைகளை உட்கொள்ளுதல்.	விவரித்தல்	கவனித்தல்	வண்ணப்பட ஒளி அட்டை	
			அன்றாட வாழ்க்கை முறைகளில் ஏற்படும் மாற்றங்களாவன. • உணவில் பற்றாக்குறை • கால்சியம் • வைட்டமின்-டி • பாஸ்பேட் அதிகமான உணவு • புரதம் நிறைந்த உணவு • வைட்டமின் ஏ • புகைப்பிடித்தல்				

வ. எண்	நேரம்	குறிப்பான நோக்கங்கள்	பொருளடக்கம்	ஆராய்ச்சியாளர் செயல்	மாதிரிகளின் செயல்கள்	ஒலி, ஒளி சார் உபகரணங்கள்	மதிப்பீடு
			• குடிப்பழக்கம் • சூரிய ஒளி படாமல் இருத்தல்				
			உடற்கூறில் ஏற்படும் மாற்றம் மேற்கூறிய காரணிகளிலும், மாற்றங்களினாலும் ↓ எலும்பின் வலு குறைந்து விடுதல் ↓ எலும்பின் பாகங்களில் பாதிப்படைகிறது ↓ எலும்பின் அமைப்பில் மாற்றம் ஏற்பட்டு எலும்பின் கார்டெக்ஸ் பகுதிகள் பாதிப்படைகின்றன. ↓ இறுதியாக எலும்பில் முறிவு ஏற்பட்டு விடுகிறது. **அறிகுறிகள்** • எலும்பில் வலி (நிற்கும் போது, குதிக்கும் போது வலி அதிகமாதல்) • முதுகு வளைந்து போதல்				

வ. எண்	நேரம்	குறிப்பான நோக்கங்கள்	பொருளடக்கம்	ஆராய்ச்சியாளர் செயல்	மாதிரிகளின் செயல்கள்	ஒலி, ஒளி சார் உபகரணங்கள்	மதிப்பீடு
			• வயிறுபுடைத்து முட்டி மற்றும் இடுப்பு வளைந்து போதல் • முச்சு திணறல், மலச்சிக்கல் • எலும்பின் நிறைகுறைவில் எவ்வித அறிகுறிகளிலும் தென்படாமல் இருத்தல். • எலும்பு முறிவு, பற்சிதைவு • மணிக்கட்டில் முறிவு • எலும்பு முறிவு ஏற்பட்டுவிடும் என்ற பயம் **<u>கண்டறியும் முறைகள்</u>** • நுண்கதிர் வீச்சு முறை • இரத்த பரிசோதனை (கால்சியம், பாஸ்பேட், நுண்ணுயிர் கிருமிகள் மற்றும் ஹைமட்டோகிட் அளவு) **<u>சிகிச்சை முறைகள்</u>** சிகிச்சை முறையின் குறிக்கோள் எலும்பை வலுப்படுத்தியும், எலும்பு முறிவை கட்டுப்படுத்துதலுமே சிகிச்சை முறையின் நோக்கமாகும். கால்சியம் மற்றும் வைட்டமின் டி				

வ. எண்	நேரம்	குறிப்பான நோக்கங்கள்	பொருளடக்கம்	ஆராய்ச்சியாளர் செயல்	மாதிரிகளின் செயல்கள்	ஒலி, ஒளி சார் உபகரணங்கள்	மதிப்பீடு
			நிறைந்த உணவுகளை உண்ணுதல். • பால் பொருட்கள் • கீரை வகைகள் • வேர் கிழங்குகள் • வெண்ணெய் போன்ற உணவுகளை எடுத்துக்கொள்ளுதல் • உடல் எடை குறைவதற்கான உடற்பயிற்சிகளை மேற்கொள்ளுதல் • கால்சியோனின் சிகிச்சை • ஹார்மோன் சிகிச்சை முறைகள் • புகைப்பிடித்தல் மற்றும் குடிப்பழக்கங்களை கைவிடுதல் • பைபாஸ்போனேட், அலன்ரோனேட் கால்சியம் மாத்திரைகளை உட்கொள்ளுதல்.				

வ. எண்	நேரம்	குறிப்பான நோக்கங்கள்	பொருளடக்கம்	ஆராய்ச்சியாளர் செயல்	மாதிரிகளின் செயல்கள்	ஒலி, ஒளி சார் உபகரணங்கள்	மதிப்பீடு
6.		தடுக்கும் முறைகளை பற்றி எடுத்துக்கூற வேண்டும்.	**<u>தடுப்பு முறைகள்</u>** • எலும்பு தேய்மானம் என்பது ஒரு தொற்றுநோய். அதேபோல் வருமுன் தடுக்கக்கூடிய நோயேயாகும். • கால்சியம் மற்றும் வைட்டமின் டி நிறைந்த உணவுகள். **<u>சரிவிகித உணவில் தேவையான அளவு கால்சியம் எடுத்துக்கொள்ளுதல்.</u>** • வைட்டமின்-டி நிறைந்த உணவுப்பொருட்கள் • சூரிய ஒளியில் படுதல் (காலை மற்றும் மாலை வேளைகளில்) • கொழுப்பு நீக்கிய பால் அருந்துதல் • சோடியம் நிறைந்த உணவுகளை கைவிடுதல் **<u>உடற்பயிற்சி</u>** • உடல்எடை குறைவதற்கான உடற்பயிற்சிகளை மேற்கொள்ளுதல் • குடிப்பழக்கம் மற்றும் புகைப்பிடித்தலை கைவிடுதல்	விவரித்தல்	கவனித்தல்	வண்ணப்பட ஒளி அட்டை	

PATIENT CONSENT FORM

TITLE : A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING PREVENTION OF OSTEOPOROSIS AMONG HEALTH CARE PERSONNEL WORKING IN RAJIV GANDHI GOVERNMENT GENERAL HOSPITAL, CHENNAI-03.

Name of Participant	**:**
Date	**:**
Age/sex	**:**
Name of the Principal Investigator	**:** NANCY. J
Name of the institution	**:** Rajiv Gandhi Government General Hospital Chennai - 03.
Enrollment No	**:**
Documentation of the informed consent	**:** (legal representative can sign if the participant is minor or competent).

I _____have read/it has been read for me, the information in this form. I was free to ask any questions and they have been answered. I am over 18 years of age and exercising my free power of choice, hereby give my consent to be included as a participant in the study.

- I have read and understood this consent form and the information provided to me.
- I have had the consent document explained in detail to me.
- I have been explained about the nature of my study.
- My rights and responsibilities have been explained to me by the investigator
- I am aware of the fact that I can opt out of the study at any time without having to give any reason and this will not affect my future treatment in this hospital.

- I hereby give permission to the investigators to release the information obtained from me as a result of participation in this study to the regulatory authorities, government agencies and Institutional ethics committee. I understand that they are publicly presented.
- My identity will be kept confidential if my data are publicly presented.
- I have had my questions answered to my satisfaction
- I am aware that I have any question during this study; I should contact the concerned investigator. By signing this consent form I attest that the information given in this document has been clearly explained to me and understood by me . I will be given a copy of this consent form.

1. **Name and signature / thump impression of the participant(or legal representative if participant in competent)**

   Name **:**_____ Signature:_____

   Date: _____

2. **Name and signature of impartial witness (required for illiterate patients)**

   Name **:**_____ Signature:_____

   Date: _____

3. **Name and signature of the Investigator or her representative obtaining consent:**

   Name **:**_____ Signature:_____

   Date: _____

INFORMATION TO PARTICIPANTS

TITLE : A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING PREVENTION OF OSTEOPOROSIS AMONG HEALTH CARE PERSONNEL WORKING IN RAJIV GANDHI GOVERNMENT GENERAL HOSPITAL, CHENNAI-03.

Name of the Participant :

Date :

Age/sex :

Investigator : NANCY.J

Name of the institution : Rajiv Gandhi Government General Hospital Chennai - 03.

Enrolment No :

You are invited to take part in this study. The information in this document is meant to help you decide whether or not to take part. Please feel free to ask if you have any queries or concerns.

You are being asked to Cooperative in this study being conducted in selected Rajiv Gandhi Government General Hospital at Chennai.

What is the Purpose of the Research (explained)

This research is conducted to assess the effectiveness of structured teaching programme on knowledge regarding prevention of osteoporosis among health care personnel working in Rajiv Gandhi Government General Hospital, Chennai-03.. We obtained permission from the institutional ethics committee.

Study Procedures

- Study will be conducted after approval of ethics committee
- A written formal permission will be obtained from authorities of Rajiv Gandhi government general hospital, Chennai to conduct study.
- The purpose of study will be explained to the participants.
- The investigator will obtain informed consent.
- The investigator will assess the knowledge level of each participant before the structured teaching programme by using a structured questionnaire.
- The procedure of will be explained to them with the help of planned teaching programme
- Following that the level of knowledge will be assessed after planned teaching programme

Possible benefits to other people

The result of the research may provide benefits to the early detection and prevention of breast cancer and also empathetic care to them by investigator.

Confidentiality of the information obtained from you

You have the right to confidentiality regarding the privacy of your personal details. The information from this study, if published in scientific journals or presented at scientific meetings, will not reveal your identity.

How will your decision not to participate in the study affect you?

Your decisions not to participate in this research study will not affect your activity of daily living, medical care or your relationship with investigator or the institution.

Can you decide to stop participating in the study once you start?

The participation in this research is purely voluntary and you have the right to withdraw from this study at any time during course of the study without giving any reasons.

Your Privacy in the research will be maintained throughout study. In the event of any publications or presentation resulting from the research, no personally identifiable information will be shared.

Signature of Investigator

Date

Signature of participants

Date

ஆராய்ச்சி தகவல் தாள்

ஆராய்ச்சியின் தலைப்பு :

இராஜிவ் காந்தி அரசு பொது மருத்துவமனை சென்னை - 3 ல் பணிபுரியிம் சுகாதார பணியாளர்களுக்கு எலும்பு தேய்மானம் வராமல் தடுக்கும் முறை பற்றிய அரிவுத்திறனை மதிப்பீடு செய்யும் கட்டமைக்கப்பட்ட நலக் கல்வி கற்பித்தலின் திறனாய்வு.

பங்கேற்பாளர் பெயர் :

ஆய்வாளர் பெயர் : நான்ச. ஜே

ஆய்வு நடைபெறும் இடம் : இராஜிவ் காந்தி அரசு பொது மருத்துவமனை

சுகாதாரப் பணியாளர்கள்

சென்னை -03

_____ என்பவராகிய நான் இந்த ஆய்வின் விவரங்களையும் அதன் நோக்கங்களையும் முழுமையாக அறிந்து கொண்டேன். எனது சந்தேகங்கள் அனைத்திற்கும் தகுந்த விளக்கம் அளிக்கப்பட்டது.இந்த ஆய்வில் முழு சுதந்திரத்துடன் மற்றும் சுயநினைவுடன் பங்கு கொள்ள சம்மதிக்கிறேன்.

1.நான் இந்த ஒப்புதல் தகவல் தாள் படித்து புரிந்து கொண்டேன்.

2.இச்சுய ஒப்புதல் படிவத்தை பற்றி எனக்கு விளக்கப்பட்டது.

3.எனக்கு விளக்கப்பட்ட விஷயங்களை நான் புரிந்து கொண்டேன்.நான் எனது சம்மதத்தை தெரிவிக்கிறேன்.

4.இந்த ஆய்வினை பற்றிய அனைத்து தகவல்களும் எனக்கு தெரிவிக்கப்பட்டது.

5.இந்த ஆய்வில் ஏற்படும் பாதிப்புகள் பற்றி எனக்கு விளக்கம் அளிக்கப்பட்டது.

6..நான் ஆய்வாளருக்கு முழு ஒத்துழைப்பு அளிப்பேன், மேலும், எனக்கு பக்கவிளைவு ஏதாவது ஏற்பட்டால் ஆய்வாளருக்கு உடனடியாக தெரிவிப்பேன்

இந்த ஆய்வில் பிறரின் நிர்பந்தமின்றி என் சொந்த விருப்பத்தின் பேரில் நான் பங்கு பெறுவேன். மற்றும் நான் இந்த ஆராய்ச்சியிலிருந்து எந்த நேரமும் பின் வாங்கலாம் என்பதையும் நான் புரிந்து கொண்டேன் .

இந்த ஆய்வில் கலந்து கொள்வதின் மூலம் என்னிடம் பெறப்படும் தகவலை ஆய்வாளர் இன்ஸ்டிட்யூசனல் எத்திக்ஸ் கமிட்டியினரிடமோ ,அரசு நிறுவனத்திடமோ தேவைப்பட்டால் பகிர்ந்து கொள்ளலாம் என சம்மதிக்கிறேன்.

இந்த ஆய்வின் முடிவுகளை வெளியிடும்போது எனது பெயரோ, அடையாளங்களோ வெளியிடப்படாது என அறிந்து கொண்டேன்.

இந்த ஆய்வில் பங்கேற்கும்போது ஏதேனும் சந்தேகம் ஏற்பட்டால் உடனே ஆய்வாளரை தொடர்பு கொள்ள வேண்டும் என அறிந்து கொண்டேன்.

இந்த ஆராய்ச்சி தகவல் தாளில் கையழுத்திடுவதின் மூலம் இதிலுள்ள அனைத்து விஷயங்களும் எனக்கு தெளிவாக விளக்கப்பட்டது என்று தெரிவிக்கிறேன் மற்றும் ஆராய்ச்சியையும் புரிந்துகொண்டேன்.இந்த ஒப்புதல் படிவத்தின் நகல் எனக்கு கொடுக்கப்படும் என்று தெரிந்துகொண்டேன்.

ஆய்வினால் ஏற்படும் நன்மைகள்

இந்த ஆய்வில் கலந்து கொள்வதின் மூலம் நீங்கள் எலும்பு தேய்மானம் வராமல் தடுப்பதற்கான வழிமுறைகளை அறிந்து அதன்மூலம் பயன் பெற உதவியாக இருக்கும்.

இந்த ஆய்வில் பங்கேற்றாலும் நீங்கள் வழக்கமான சிகிச்சையை தொடர்ந்து பெறலாம்.

ஆய்வாளர் கையொப்பம் பங்கேற்பாளர் கையொப்பம்

தேதி தேதி

ஆராய்ச்சி ஒப்புதல் கடிதம்

ஆராய்ச்சியின் தலைப்பு :

இராஜிவ் காந்தி அரசு பொது மருத்துவமனை சென்னை - 3 ல் பணிபுரியிம் சுகாதார பணியாளர்களுக்கு எலும்பு தேய்மானம் வராமல் தடுக்கும் முறை பற்றிய அரிவுத்திறனை மதிப்பீடு செய்யும் கட்டமைக்கப்பட்ட நலக் கல்வி கற்பித்தலின் திறனாய்வு.

ஆய்வாளர் பெயர் : நான்சி. ஜே
பங்கேற்பாளர் பெயர் :
தேதி :
வயது/பால் :

- ✓ ஆய்வாளர் மேற்கொள்ளும் ஆராய்ச்சியில் பங்கேற்க யாருடைய கட்டாயமுமின்றி முழுமனதுடனும் சுயநினைவுடனும் சம்மதிக்கிறேன்
- ✓ ஆய்வாளர் மேற்கொள்ளப்போகும் பரிசோதனைகளை மிக தெளிவாக விளக்கிக்கூறினார்.
- ✓ எனக்கு விருப்பமிலாத பட்சத்தில் ஆராய்ச்சியிலிருந்து எந்நேரமும் விலகலாம் என்பதையும் ஆய்வாளர் மூலம் அறிந்து கொண்டேன்.
- ✓ இந்தஆராய்ச்சி ஒப்புதல் கடிதத்தில் உள்ள விவரங்களை நன்கு புரிந்து கொண்டேன்.எனது உரிமைகள் மற்றும் கடமைகள் ஆராய்ச்சியாளர் மூலம் வளக்கப்பட்டது.
- ✓ நான் ஆராய்ச்சியாளருடன் ஒத்துழைக்க சம்மதிக்கிறேன். எனக்கு ஏதேனும் உடல்நலக்குறைவு ஏற்பட்டால் ஆராய்ச்சியாளரிடம் தெரிவிப்பேன்.
- ✓ நான் வேறு எந்த ஆராய்ச்சியிலும் தற்சமயம் இடம்பெறவில்லை என்பதை தெரிவித்து கொள்கிறேன்.
- ✓ இந்தஆராய்ச்சியின் தகவல்களை வெளியிட சம்மதிக்கிறேன். அப்படி வெளியிடும் போது என் அடையாளம் வெளிவராது என்பதை அறிவேன்.
- ✓ எனக்கு இந்த ஒப்புதல் கடிதத்தின் நகல் கொடுக்கப்பட்டது.

ஆய்வாளர் கையொப்பம்	பங்கேற்பாளர் கையொப்பம்
தேதி	தேதி

DATA SHEET FOR DATA ANALYSIS											
Samples	Age	HEIGHT	WEIGHT	Education	RELIGION	Married	Income	Diet	HABITS	EXERCISE	MENSTRUAL HISTORY
1	32	b	c	12 th	hindu	married	>5001	Mixed	a	a	a
2	38	b	c	B.Com	hindu	married	>5001	veg	a	c	a
3	37	b	a	B.A	hindu	married	>5001	mixed	a	c	a
4	33	b	b	12 th	christian	married	>5001	mixed	a	c	a
5	31	b	c	12th	christian	married	>5001	Mixed	a	c	a
6	26	b	c	12th	hindu	married	>5001	Mixed	a	c	a
7	28	a	c	12th	hindu	unmarried	>5001	Mixed	a	a	a
8	39	b	c	12th	hindu	married	>5001	Mixed	a	c	a
9	38	b	c	B.com	hindu	married	>5001	veg	a	c	a
10	26	b	b	12 th	hindu	unmarried	>5001	mixed	a	c	a
11	36	b	c	12 th	hindu	married	>5001	mixed	a	c	a
12	31	b	b	BBA	christian	married	>5001	mixed	a	c	a
13	32	b	b	B.Sc	hindu	married	>5001	mixed	a	c	a
14	34	b	b	Diploma	muslim	married	>5001	mixed	a	a	a
15	33	c	b	12 th	hindu	married	>5001	mixed	a	c	b
16	40	a	a	12 th	christian	married	>5001	mixed	a	c	a
17	36	b	b	12 th	hindu	married	>5001	mixed	a	a	a
18	38	b	a	diploma	hindu	married	>5001	mixed	a	b	a
19	27	b	a	12 th	hindu	unmarried	>5001	mixed	a	c	a
20	39	b	b	12th	hindu	married	>5001	mixed	a	c	b
21	32	b	b	12th	hindu	married	>5001	mixed	a	c	a
22	34	b	b	12th	christian	married	>5001	mixed	a	a	a
23	35	b	c	12th	hindu	married	>5001	mixed	a	c	a
24	34	b	c	12th	christian	married	>5001	mixed	a	c	b
25	38	c	b	12th	hindu	married	>5001	mixed	a	c	a
26	39	b	c	B.A	christian	married	>5001	veg	a	b	a
27	34	b	b	12th	hindu	married	>5001	mixed	a	c	a
28	35	b	a	12th	hindu	married	>5001	mixed	a	c	a
29	38	a	b	12th	hindu	married	>5001	mixed	a	c	a
30	36	b	a	diploma	christian	married	>5001	mixed	a	c	b

Samples	Age	HEIGHT	WEIGHT	Education	RELIGION	Married	Income	Diet	HABITS	EXERCISE	MENSTRUAL HISTORY
31	32	b	b	diploma	hindu	married	>5001	mixed	a	c	a
32	35	c	a	12th	hindu	married	>5001	mixed	a	c	a
33	36	a	c	12th	hindu	married	>5001	mixed	a	c	a
34	32	b	b	12th	christian	married	>5001	mixed	a	a	a
35	37	a	a	12th	hindu	married	>5001	mixed	a	c	a
36	38	b	b	12th	hindu	married	>5001	mixed	a	c	b
37	39	b	c	12th	hindu	married	>5001	mixed	a	c	a
38	34	b	b	DMLT	hindu	married	>5001	veg	a	c	a
39	32	b	c	12th	christian	married	>5001	veg	a	c	a
40	38	c	b	12th	hindu	married	>5001	mixed	a	c	a
41	37	b	b	12th	christian	married	>5001	mixed	a	c	a
42	39	a	b	12th	hindu	married	>5001	mixed	a	c	b
43	40	b	c	12th	christian	married	>5001	mixed	a	c	a
44	31	b	c	audiometry	christian	married	>5001	mixed	a	c	a
45	38	b	c	12th	hindu	married	>5001	mixed	a	c	a
46	35	b	a	12th	hindu	married	>5001	mixed	a	c	a
47	37	c	b	12th	muslim	married	>5001	mixed	a	c	b
48	34	b	b	12th	christian	married	>5001	mixed	a	c	a
49	28	b	c	12th	hindu	unmarried	>5001	mixed	a	c	a
50	30	b	c	B.Com	hindu	married	>5001	mixed	a	c	a
51	34	b	b	12th	christian	married	>5001	mixed	a	c	a
52	31	a	a	12th	hindu	married	>5001	mixed	a	c	a
53	33	b	b	12th	hindu	married	>5001	mixed	a	c	a
54	38	c	b	12th	christian	married	>5001	mixed	a	c	a
55	29	b	b	12th	hindu	unmarried	>5001	mixed	a	b	a
56	30	c	c	12th	hindu	married	>5001	mixed	a	c	b
57	31	a	b	12th	christian	married	>5001	mixed	a	c	a
58	38	b	b	12th	hindu	married	>5001	mixed	a	a	a
59	40	a	b	12th	hindu	married	>5001	mixed	a	c	a
60	29	b	b	diploma	christian	unmarried	>5001	mixed	a	c	a

PRE TEST

QA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	tot=	percentage
Samples																																
1	1	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	10	33.3
2	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	1	1	0	1	1	11	36.5
3	0	0	1	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	9	30
4	0	0	1	1	1	0	0	1	0	0	1	0	0	0	1	1	0	1	1	0	0	0	0	1	1	0	0	0	1	1	13	43.3
5	0	0	1	1	0	1	1	1	1	1	1	0	0	0	0	1	0	0	0	1	0	1	0	1	0	0	0	0	1	1	13	43.3
6	1	0	1	1	0	0	1	1	1	1	0	1	0	0	1	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	14	46.7
7	1	0	1	1	1	0	1	1	1	0	1	1	0	1	0	0	0	0	1	0	0	0	0	0	1	0	1	0	1	1	15	50
8	1	1	1	1	1	0	1	1	0	0	1	0	1	1	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	1	14	46.7
9	0	0	1	1	0	0	0	1	0	0	1	0	0	0	0	1	0	0	1	0	0	1	0	1	1	1	0	0	1	0	11	36.7
10	0	0	1	1	0	0	0	1		1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	6	20
11	1	0	1	1	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	9	30
12	0	1	0	1	0	0	0	0	1	1	0	0	0	0	1	1	0	0	1	0	0	1	1	0	1	1	0	0	0	0	11	36.7
13	1	0	1	1	1	0	0	1	1	0	1	0	0	1	1	1	0	0	0	1	1	0	0	0	1	0	0	1	0	1	15	50
14	0	1	1	1	1	0	0	1	1	0	1	1	0	0	1	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	13	50
15	0	1	0	1	1	0	0	1	1	1	0	0	0	0	0	0	1	0	1	0	0	1	0	0	1	0	1	0	0	0	11	36.5
16	0	0	1	1	1	0	1	1	1	1	0	1	0	0	0	1	0	0	0	1	1	0	0	0	1	0	0	0	0	1	13	43.3
17	0	1	1	0	0	0	0	1	1	0	1	0	0	1	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	0	14	46.7
18	1	0	0	1	0	0	0	1	0	0	1	0	1	0	1	0	1	0	0	1	0	1	0	0	0	1	0	1	0	1	12	40
19	1	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	1	0	1	0	0	1	1	1	0	0	1	1	0	0	10	33.3
20	1	0	1	1	0	0	0	1	0	1	1	1	0	0	1	1	1	1	0	1	0	1	0	1	1	0	0	0	1	1	16	53.3
21	1	1	0	0	0	1	0	1	0	0	0	1	0	1	0	1	0	1	0	0	1	0	0	0	0	1	0	1	0	0	11	36.7
22	0	1	1	1	1	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	1	1	0	0	0	11	36.7
23	0	0	1	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	7	23.3
24	0	1	0	1	1	0	0	1	0	1	1	0	1	0	0	1	1	0	0	1	1	0	0	0	0	1	1	0	1	0	13	43.3
25	0	0	1	1	1	0	0	1	0	1	0	0	1	0	1	1	1	1	0	1	0	0	1	0	1	0	0	1	0	0	13	43.3
26	1	1	0	0	0	0	0	1	1	0	0	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	14	46.7
27	1	0	1	1	0	0	1	1	0	0	1	0	0	0	0	1	1	0	1	1	1	0	0	0	1	0	0	0	0	0	12	40
28	1	0	0	0	0	0	1	0	1	0	0	0	1	1	0	1	1	0	0	1	0	0	0	1	1	1	0	1	0	1	13	43.3
29	1	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	1	0	10	33.3
30	0	1	1	0	0	1	0	0	0	1	0	1	0	0	1	0	0	1	0	1	0	1	1	1	0	0	0	0	0	0	11	36.7
31	1	1	0	0	0	1	1	0	0	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0	0	10	33.3
32	0	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	1	1	0	0	7	23.3
33	0	0	1	0	1	0	0	0	0	1	0	0	1	0	0	0	1	1	1	0	0	0	0	0	0	1	0	1	0	0	9	30

QA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	tot=	percentage
34	1	0	0	1	0	0	1	0	1	0	0	1	0	1	1	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	10	33.3
35	0	0	1	0	1	1	0	0	0	0	0	0	1	1	1	0	0	0	1	0	0	0	1	0	1	0	0	1	0	1	11	36.7
36	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	0	0	1	0	0	1	0	9	30
37	0	0	1	1	0	0	0	1	0	0	1	0	1	0	0	0	1	0	1	1	0	0	0	1	0	0	1	0	1	0	11	36.7
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47	0	0	1	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	1	0	0	1	0	1	1	1	0	0	0	1	10	33.3
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53	1	0	0	1	0	1	0	1	0	0	0	0	1	0	0	0	1	0	0	1	0	1	0	1	0	1	1	0	0	0	11	36.7
54	0	0	1	1	0	1	0	0	1	0	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	10	33.3
55	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	1	0	1	0	1	0	1	0	1	1	11	36.7
56	1	0	1	0	1	1	1	0	0	0	0	0	1	0	1	0	0	1	0	0	1	0	1	0	0	1	1	1	1	0	14	46.7
57	1	0	0	1	1	0	0	0	0	1	1	0	0	1	1	0	1	0	0	0	0	1	0	1	0	1	0	1	0	0	12	40
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59	0	0	1	0	1	0	1	1	0	1	1	1	0	0	0	0	0	0	0	1	0	1	0	1	1	0	0	1	1	0	13	43.3
60	1	0	0	1	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	1	0	0	1	0	1	1	10	33.3

POST TEST DATA SHEET

QA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	tot	percentage
samples																																
1	1	1	1	1	1	1	0	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	25	83.33333333
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3	1	1	1	1	0	1	1	1	0	0	0	1	1	0	1	1	0	1	1	1	0	1	1	0	1	0	1	0	1	1	20	66.66666667
4	1	1	1	1	0	1	0	1	1	0	1	0	0	0	1	1	0	1	1	1	0	1	1	1	1	1	0	1	1	1	21	70
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10	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	0	1	0	1	1	1	1	1	1	1	0	1	25	83.33333333
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13	1	1	1	1	0	0	1	0	1	0	0	1	0	1	0	1	0	0	1	0	0	1	1	0	1	1	0	1	1	0	16	53.33333333
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17	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	1	1	0	1	1	1	1	1	1	26	86.66666667
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33	1	1	1	1	0	1	0	1	1	0	1	1	1	0	0	1	0	1	1	0	1	1	0	1	0	0	1	0	1	1	19	63.33333333
34	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	0	1	1	1	1	1	1	1	0	1	25	83.33333333

QA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	tot	percentage
35	1	1	1	1	1	1	0	1	0	1	0	1	1	0	0	1	0	0	1	1	0	1	1	1	1	0	1	0	1	0	19	63.33333333
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37	1	1	1	0	1	0	0	0	1	0	0	1	0	1	0	0	1	0	1	0	1	0	0	0	0	1	0	1	1	1	14	46.66666667
38	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0	0	1	1	0	0	1	0	0	1	0	1	0	1	1	20	66.66666667
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41	1	1	1	1	1	1	0	1	0	1	0	1	0	1	0	1	1	1	1	1	1	0	1	1	1	1	0	0	1	1	22	73.33333333
42	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	1	0	1	25	83.33333333
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45	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1	1	1	1	1	0	0	1	1	1	1	24	80
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INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE, CHENNAI 600 003

EC Reg.No.ECR/270/Inst./TN/2013
Telephone No 044 25305301
Fax: 011 25363970

CERTIFICATE OF APPROVAL

To

J.Nancy
M.Sc. (N) I Year Student
College of Nursing
Madras Medical College
Chennai 600 003

Dear J.Nancy,

The Institutional Ethics Committee has considered your request and approved your study titled **"A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING PREVENTION OF OSTEOPOROSIS AMONG HEALTH CARE PERSONNEL WORKING IN RGGGH, CHENNAI 3 " - NO.06072017**

The following members of Ethics Committee were present in the meeting hold on **11.07.2017** conducted at Madras Medical College, Chennai 3

1. Prof.Dr.C.Rajendran, MD., :Chairperson
2. Prof.R.Narayana Babu,MD.,DCH., Dean,MMC,Ch-3 : Deputy Chairperson
3. Prof.Sudha Seshayyan,MD., Vice Principal,MMC,Ch-3 :Member Secretary
4. Prof.S.Mayilvahanan,MD,Director,Inst. of Int.Med,MMC, Ch-3 : Member
5. Prof.A.Pandiya Raj,Director, Inst. of Gen Surgery,MMC : Member
6. Prof.Rema Chandramohan,Prof.of Paediatrics,ICH,Chennai : Member
7. Prof. Susila, Director, Inst. of Pharmacology,MMC,Ch-3 : Member
8. Thiru S.Govindasamy, BA.,BL,High Court,Chennai : Lawyer
9. Tmt.Arnold Saulina, MA.,MSW., :Social Scientist
10. Tmt.J.Rajalakshmi, JAO,MMC, Ch-3 : Lay Person

We approve the proposal to be conducted in its presented form.

The Institutional Ethics Committee expects to be informed about the progress of the study and SAE occurring in the course of the study, any changes in the protocol and patients information/informed consent and asks to be provided a copy of the final report.

Member Secretary – Ethics Committee

MEMBER SECRETARY
INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE
CHENNAI-600 003

CERTIFICATE OF CONTENT VALIDITY

This is to certify that the tool constructed by J. Nancy M.Sc., (Nursing) II year, College of Nursing, Madras Medical College which is to be used in her study titled, "A study to assess the effectiveness of structured teaching programme on knowledge regarding prevention of osteoporosis among health care personnel working in Rajiv Gandhi Government General Hospital,chennai-3 " has been validated by the undersigned. The suggestions and modifications given by me will be incorporated by the investigator in concern with their respective guide. Then she can proceed to do the research.

Apollo College of Nursing
Apollo College of Nursing
Chennai - 600 095

Signature with seal

Name: Mrs. Lizzy Sonia

Designation: Vice Principal

College:Apollo College of Nursing.

Place: Chennai

Date: 20/12/17

CERTIFICATE OF CONTENT VALIDITY

This is to certify that the tool constructed by J. Nancy M.Sc., (Nursing) II year, College of Nursing, Madras Medical College which is to be used in her study titled, "A study to assess the effectiveness of structured teaching programme on knowledge regarding prevention of osteoporosis among health care personnel working in Rajiv Gandhi Government General Hospital,chennai-3 " has been validated by the undersigned. The suggestions and modifications given by me will be incorporated by the investigator in concern with their respective guide. Then she can proceed to do the research.

29/12/17

Signature with seal

PRINCIPAL
MADHA COLLEGE OF NURSING
MADHA NAGAR, KUNDRATHUR,
CHENNAI - 600 069
PHONE : 24780738

Name: Dr. B. Tamilarasi, M.Sc (N), Ph.D.,

Designation: Principal

College: Madha College of Nursing.

MADHA COLLEGE OF NURSING
CHENNAI - 600 069

Place:

Date: 28 DEC 2017

Lr no: 97/Con/mmc/ch-3, dt. 9.11.17

REQUISITION LETTER

From

J.Nancy
M.sc (N) –I year student,
College of Nursing,
Madras Medical College, Chennai-3.

To

The DEAN
Rajiv Gandhi government general hospital,
Madras Medical College, Chennai-3.

Through,

Principal,
College of nursing, Madras Medical College, College – 03

Respected Sir/Madam,

Sub: Requesting permission to conduct research at Rajiv Gandhi Government General Hospital, Chennai-03- Regarding

I am studying M.Sc Nursing I year at college of Nursing, Madras Medical College, Chennai, I have to conduct the research study for the partial fulfillment of M.Sc N Programme and my topic is "**A study to assess the effectiveness of structured teaching programme on knowledge and attitude regarding prevention of osteoporosis among health care personnel working in Rajiv Gandhi Government General Hospital chennai-03.**"during my II year of the programme.

I request you sir, to permit me to conduct the above study at all the medical and surgical wards, Rajiv Gandhi Government General Hospital, Chennai-3. I assure that I will not disturb the routine activities of the selected wards.

Thanking You

Yours sincerely,

J. Nancy

(J.NANCY)

Encl: Copy of Institutional Ethics Committee Approval Letter

Director & Professor,
Prof. Ortho, Madras Medical College,
Ortho Surgeon, Institute of Orthopaedics & Traumatology,
Govt. General Hospital, Chennai-3

CERTIFICATE OF ENGLISH EDITING

To whom so ever it may concern.

This is to certify that the dissertation work, "**A study to assess the effectiveness of structured teaching programme on knowledge regarding prevention of osteoporosis among health care personnel working in Rajiv Gandhi Government General Hospital,chennai-03**" done by Mrs. J.Nancy, M.Sc Nursing II year student, college of nursing, Madras Medical College,chennai-03 is edited for English language appropriateness.

Signature : M. Sundar

Designation : BT Assistant - English.

Seal : M. SUNDAR., M.A., B.Ed.
அரசினர் மேல்நிலைப் பள்ளி
அகத்தாதன்புத்தூர் - 626 123
விருதுநகர் மாவட்டம்

CERTIFICATE OF TAMIL EDITING

To whom so ever it may concern.

This is to certify that the dissertation work, "**A study to assess the effectiveness of structured teaching programme on knowledge regarding prevention of osteoporosis among health care personnel working in Rajiv Gandhi Government General Hospital, chennai-03**"done by Mrs. J.Nancy, M.Sc Nursing II year student, college of nursing, Madras Medical College,chennai-03 is edited for Tamil language appropriateness.

Signature : ந. பிரபுகுமார்

Designation : முதுகலை தமிழ் ஆசிரியர்

Seal : ந.பிரபுகுமார் எம்.ஏ., பி.எட்.,
முதுகலை பட்டதாரி ஆசிரியர்,
அரசு மேல்நிலைப்பள்ளி,
சொக்கநாதன்புத்தூர் - 626 121

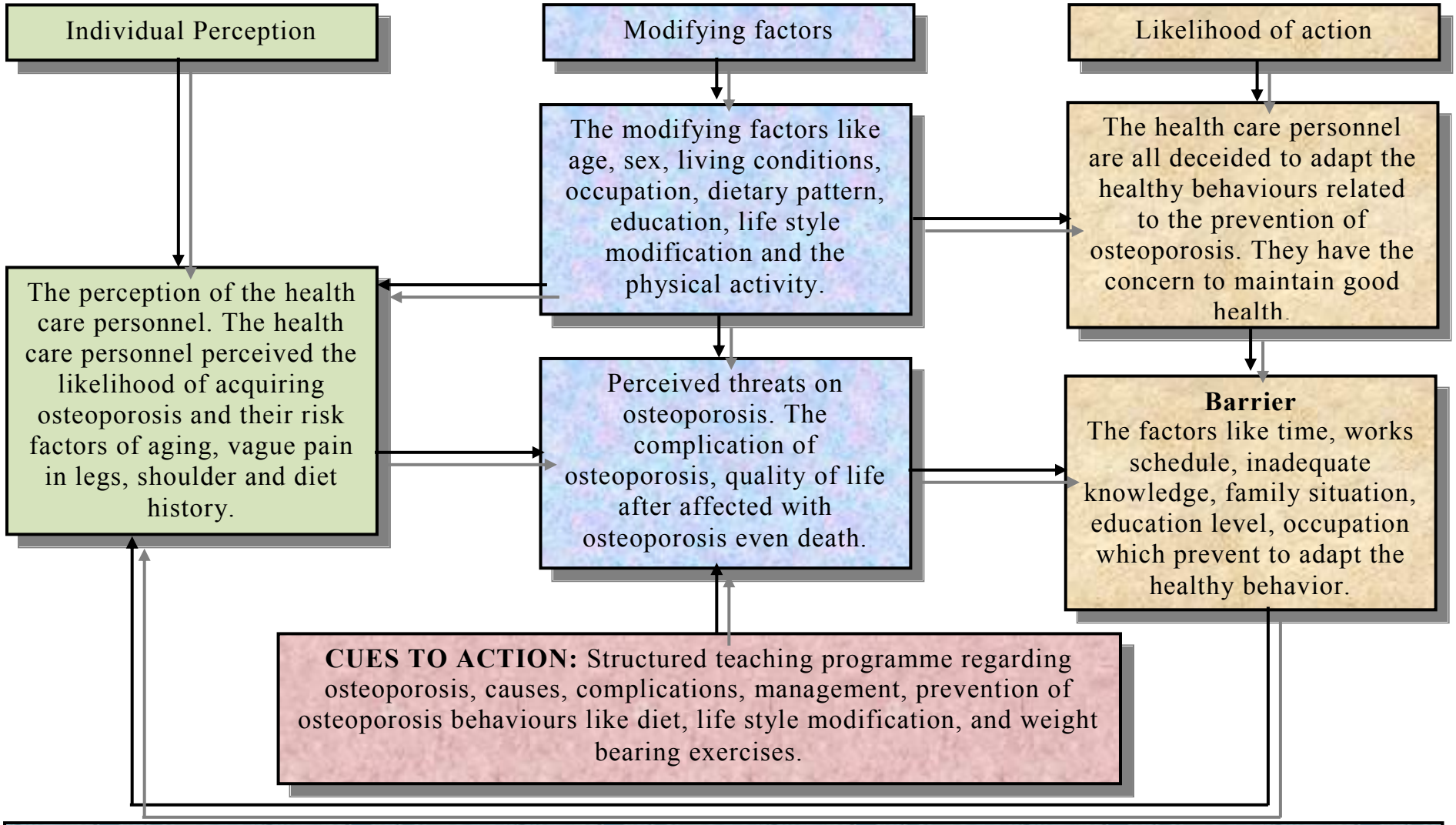
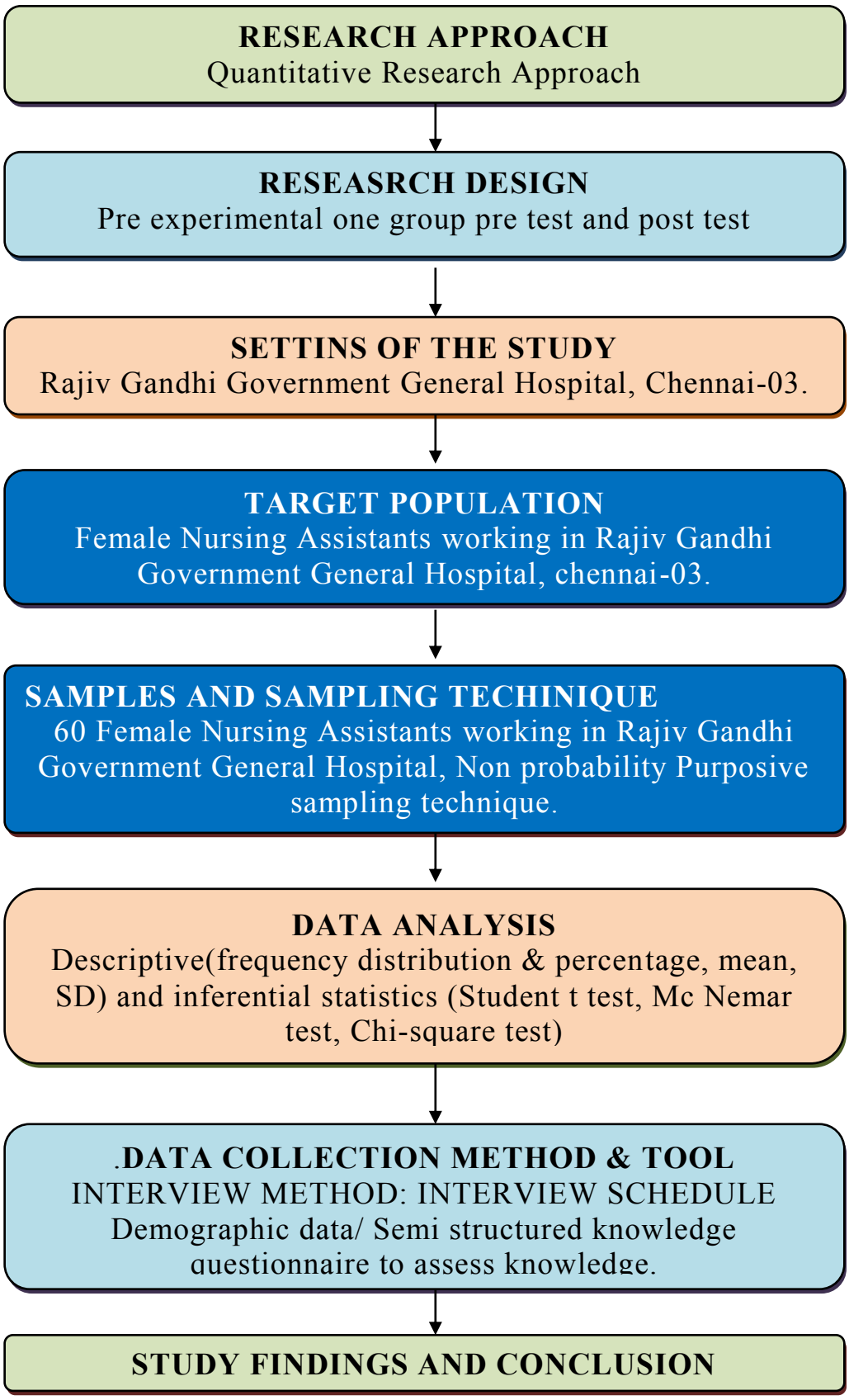


FIGURE: 1 HOCHBAUM ROSENSTOCK AND KEGELS BECKER AND MAIMAN'S HEALTH BELIEF MODEL

FIGURE 1: SCHEMATIC REPRESENTATION OF METHODOLOGY



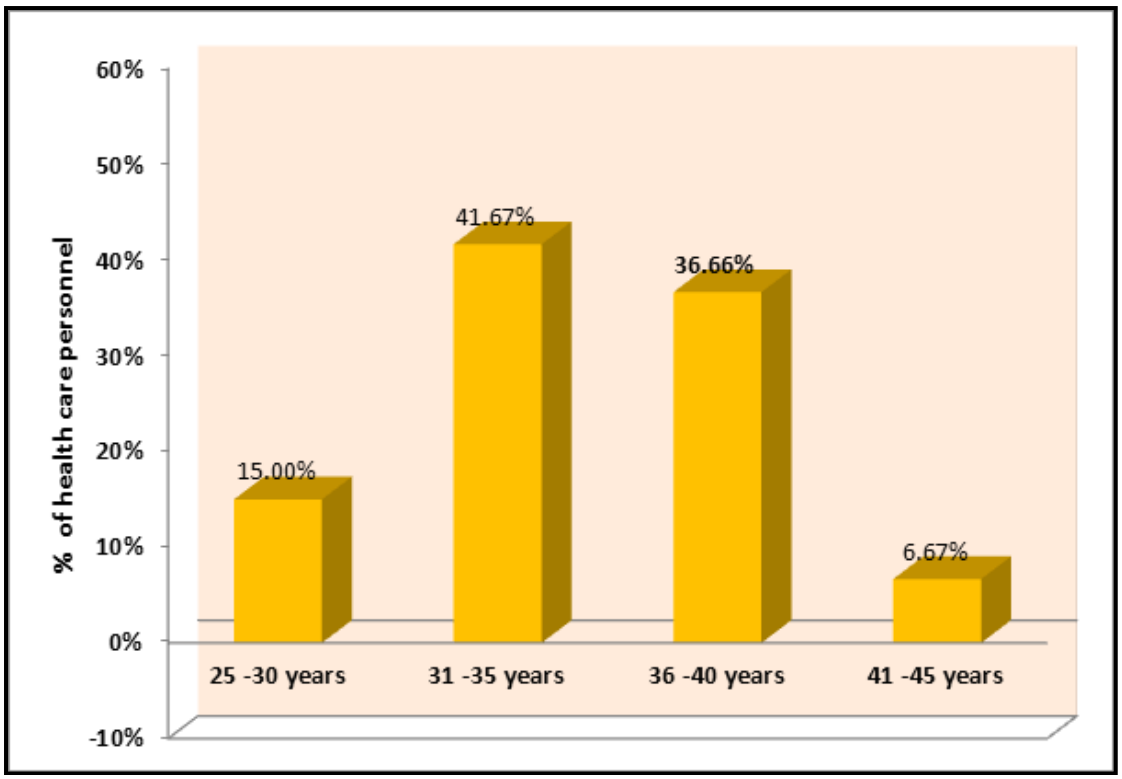


Figure-2: Age wise distribution of health care workers.

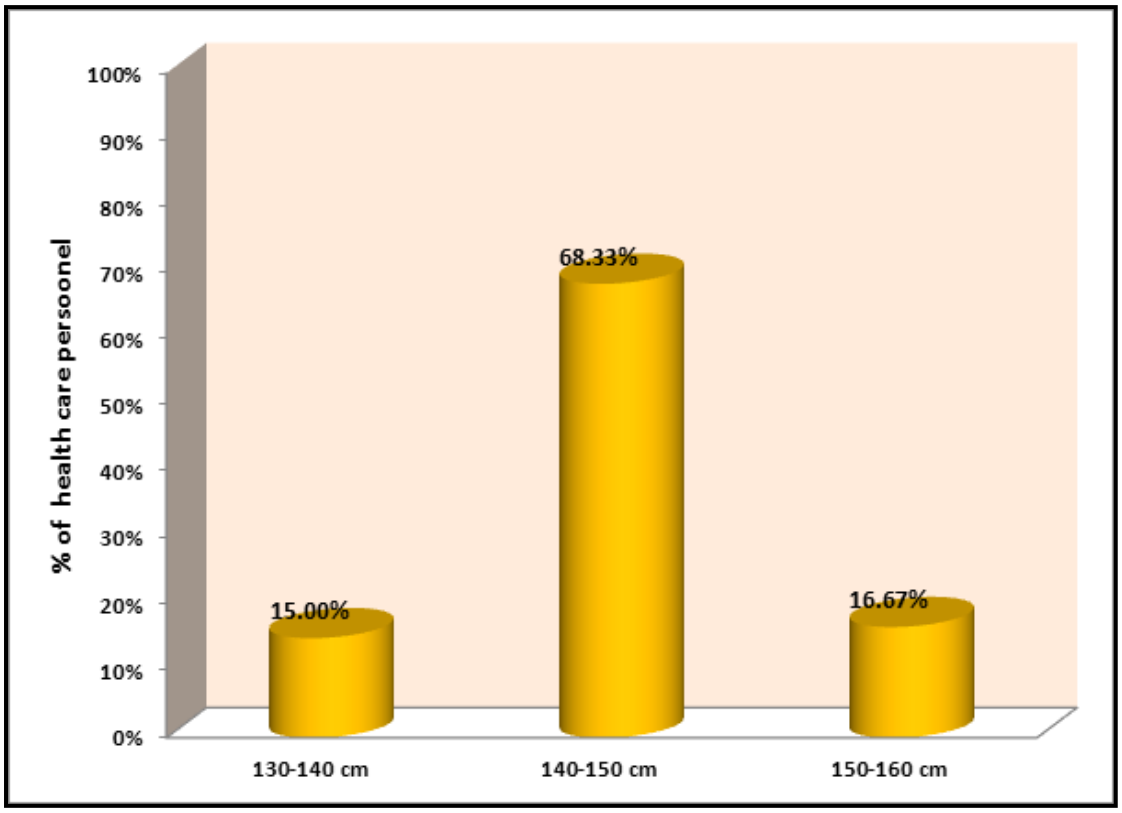


Figure-3: Height wise distribution of health care workers.

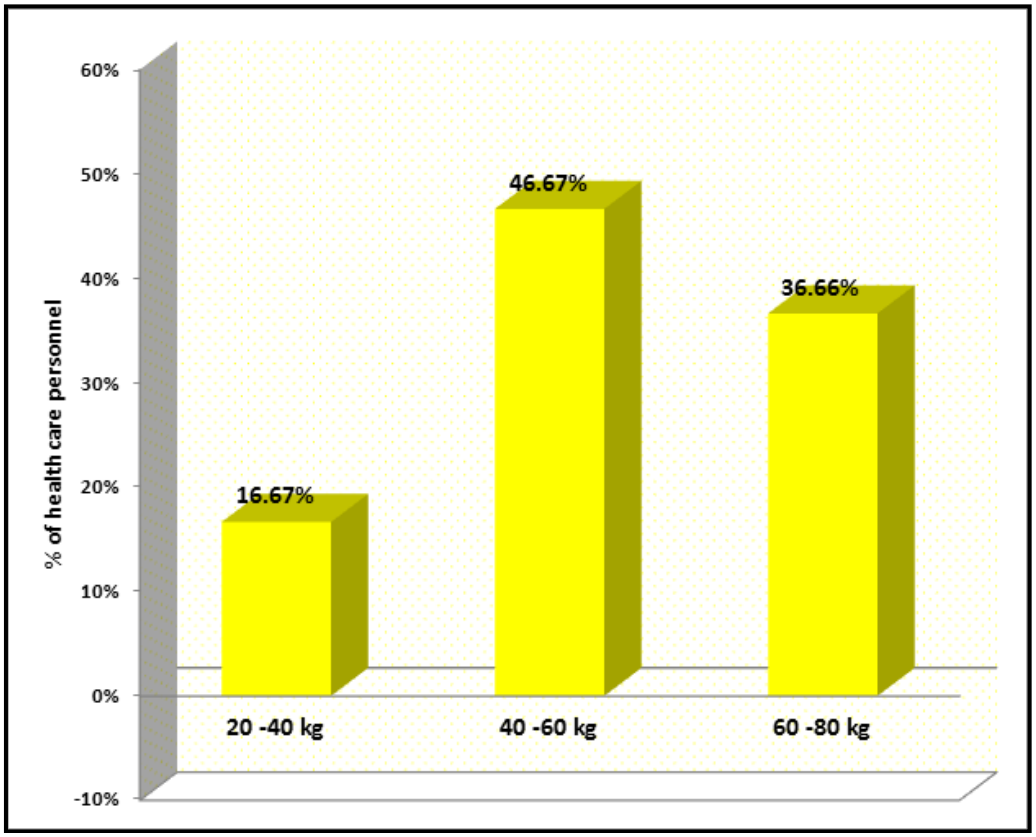


Figure-4: Weight wise distribution of health care personnel

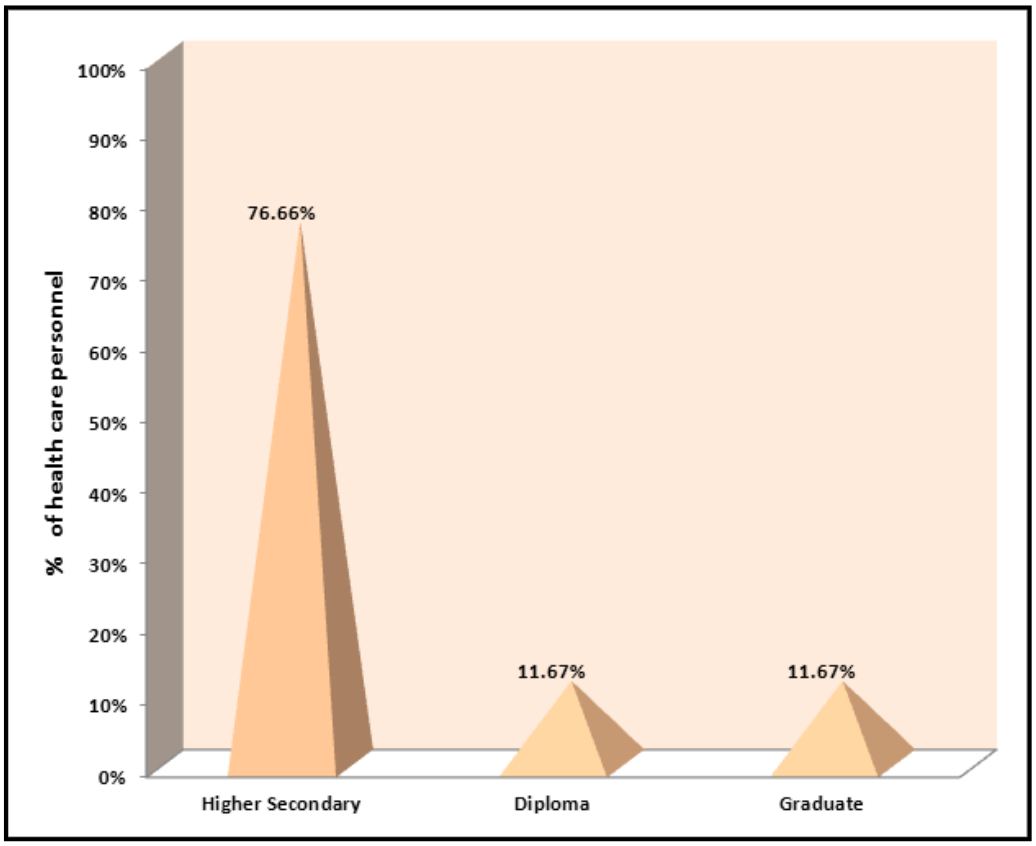


Figure-5: Distribution of Educational status

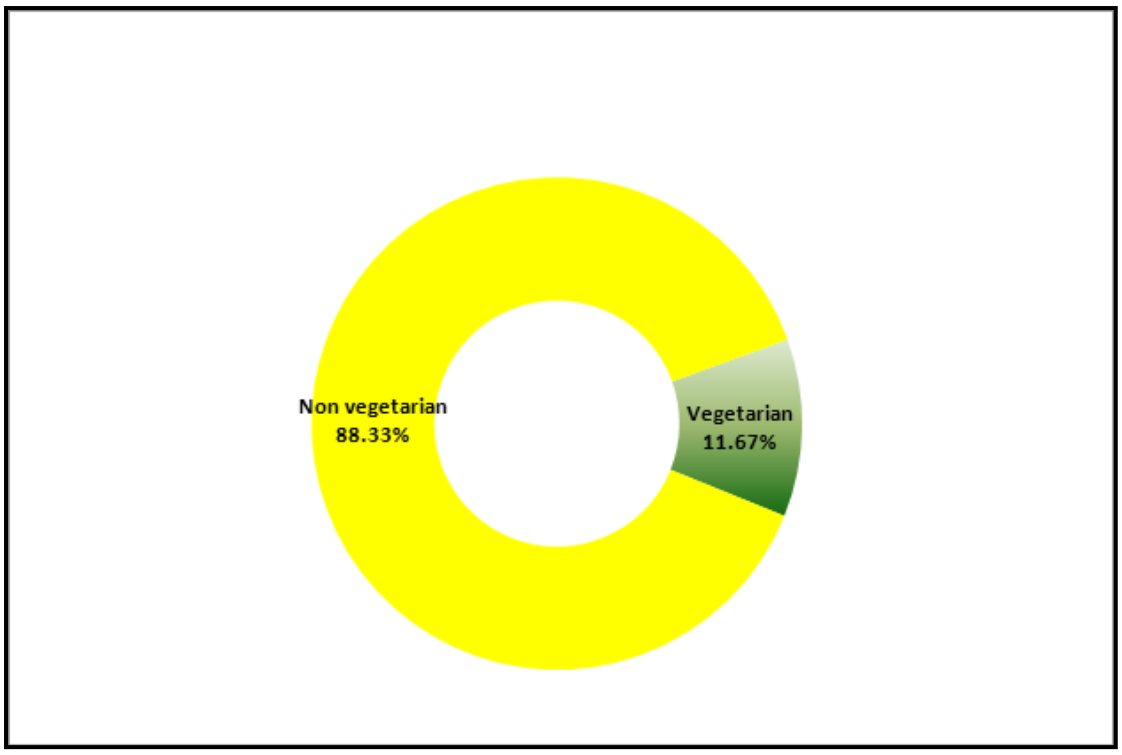


Figure-6: Distribution of diet pattern of health care workers.

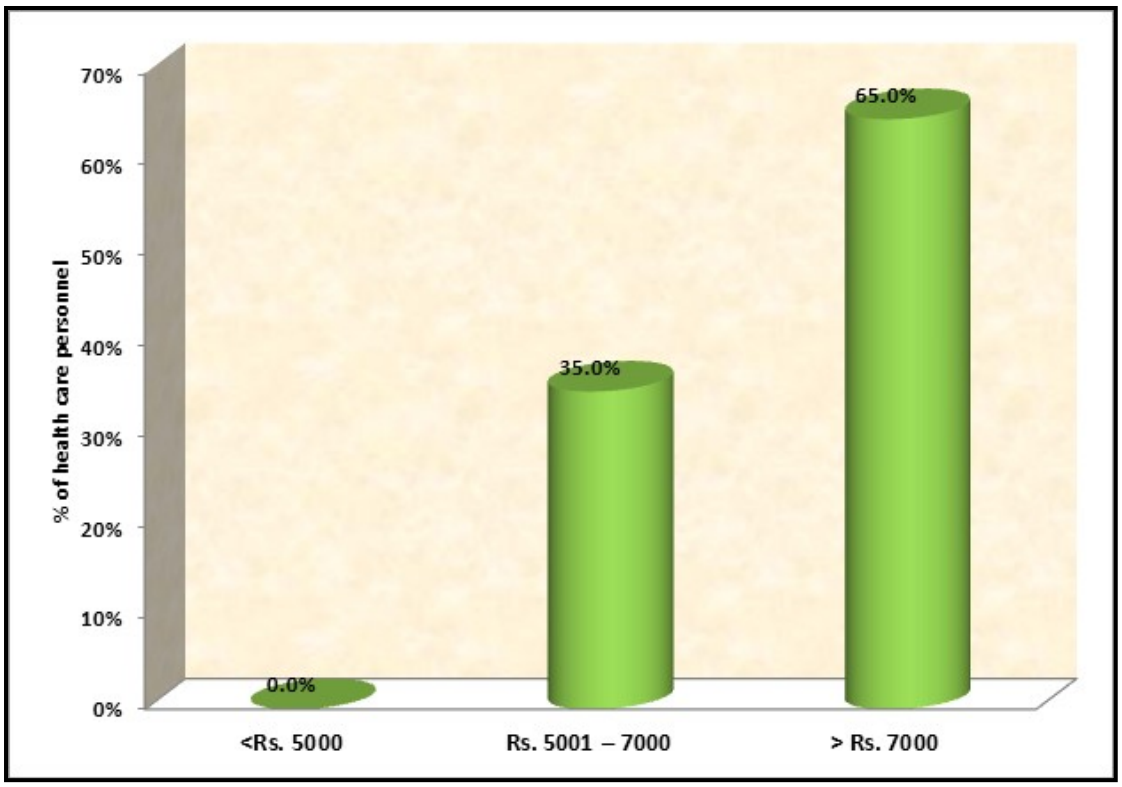


Figure-7:Distribution of monthly family income of health care workers.

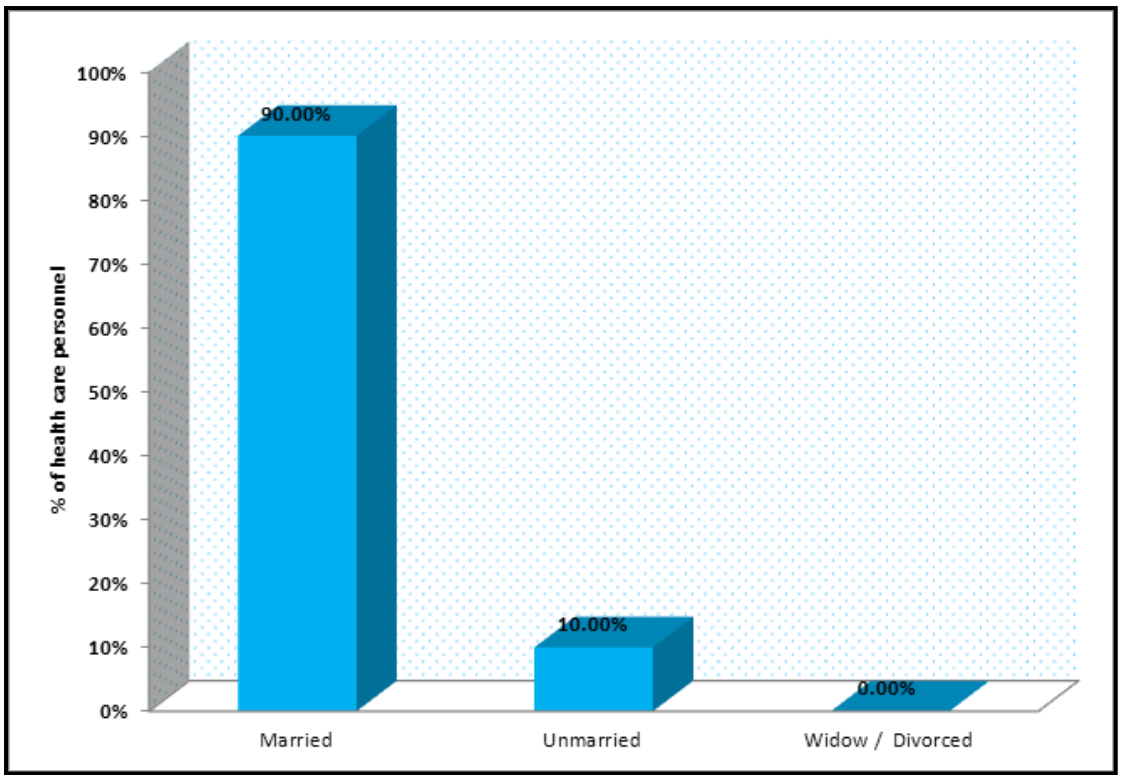


Figure-8: Distribution of Marital Stautus

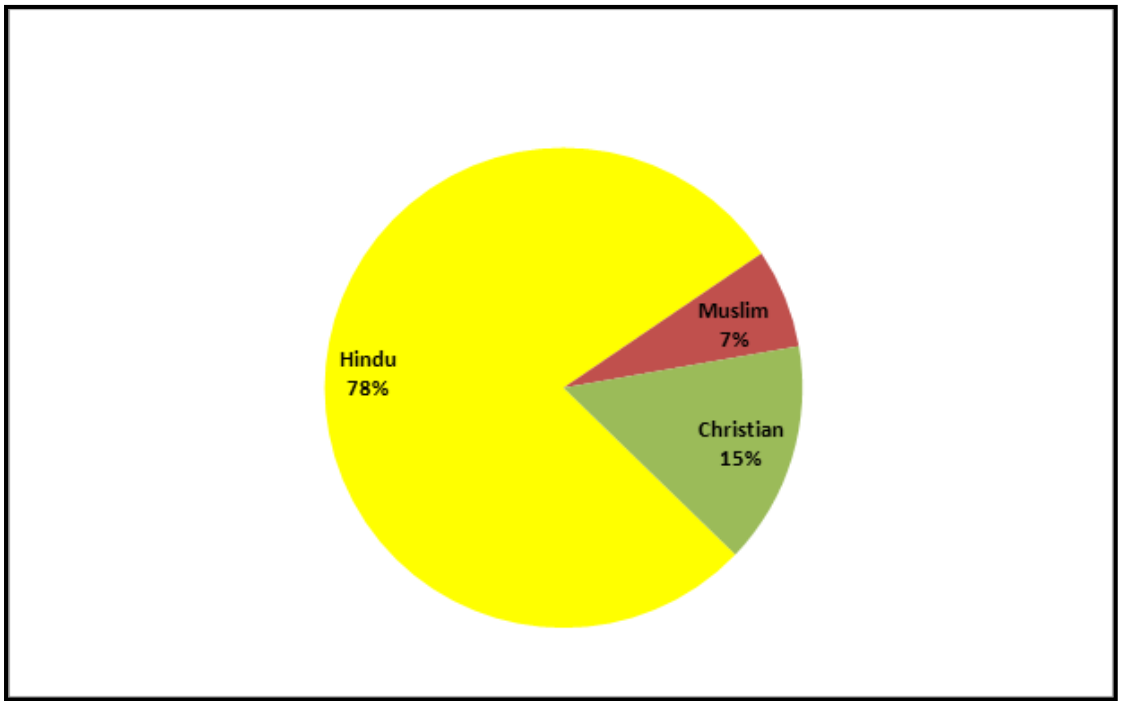


Figure 9: Distribution of Religion of Health Care Personnel

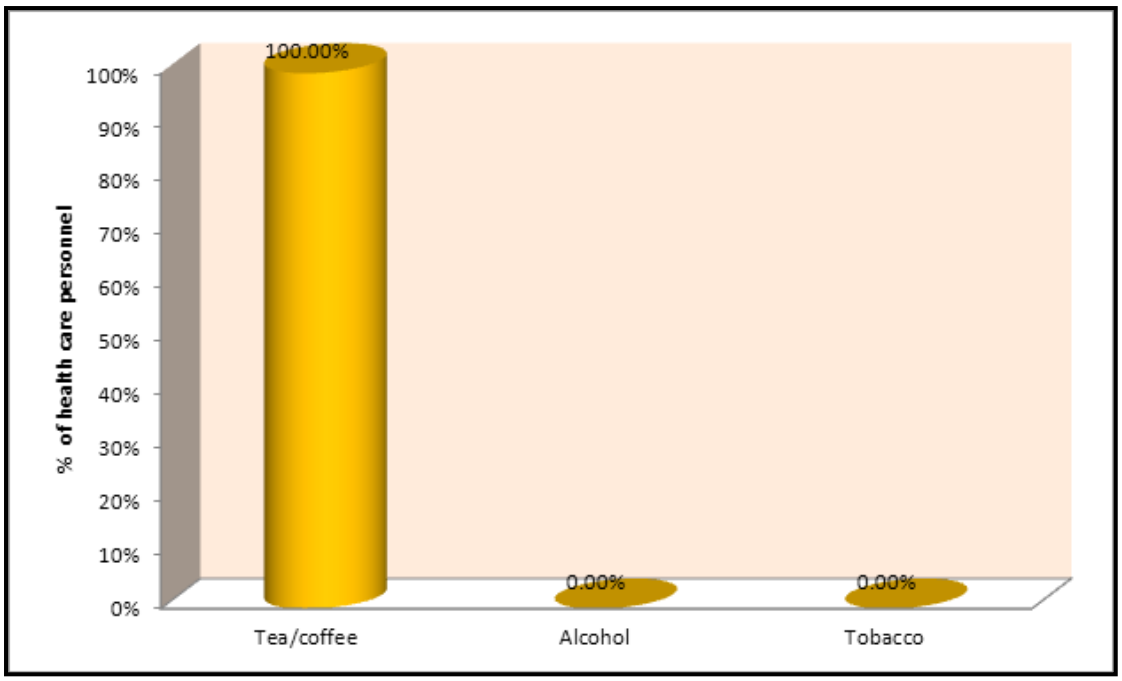


Figure 10: Distribution of habitual pattern

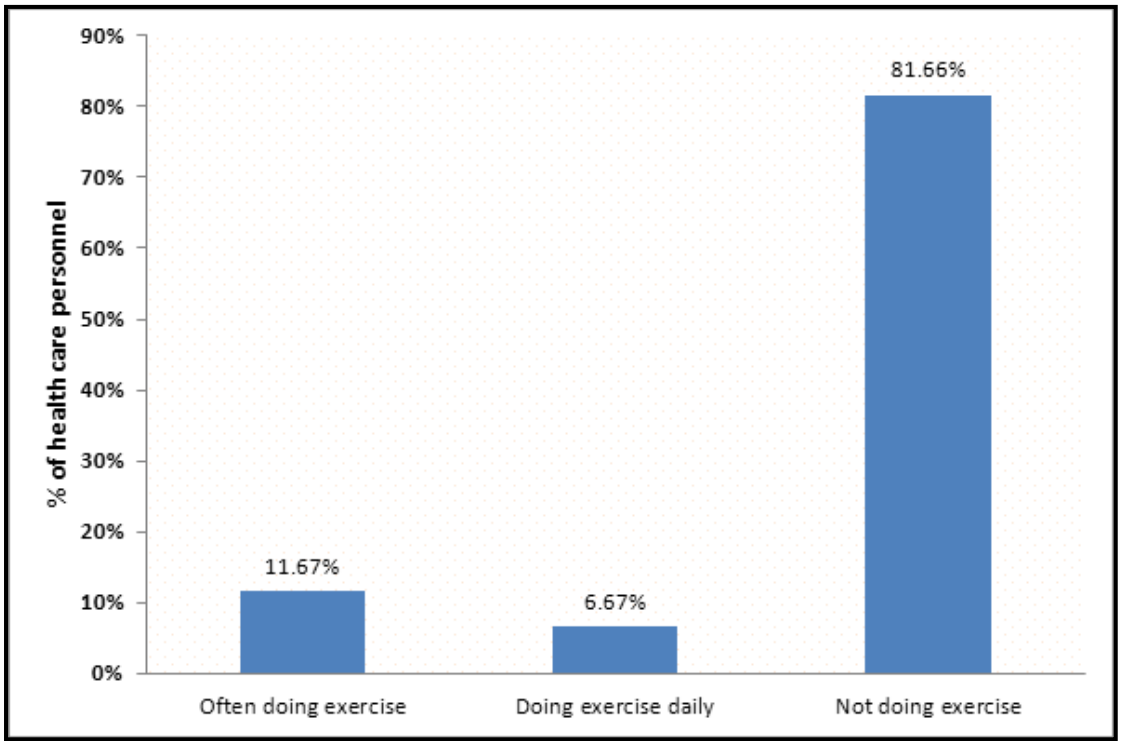


Figure 11: Distribution of particulars of Exercise.

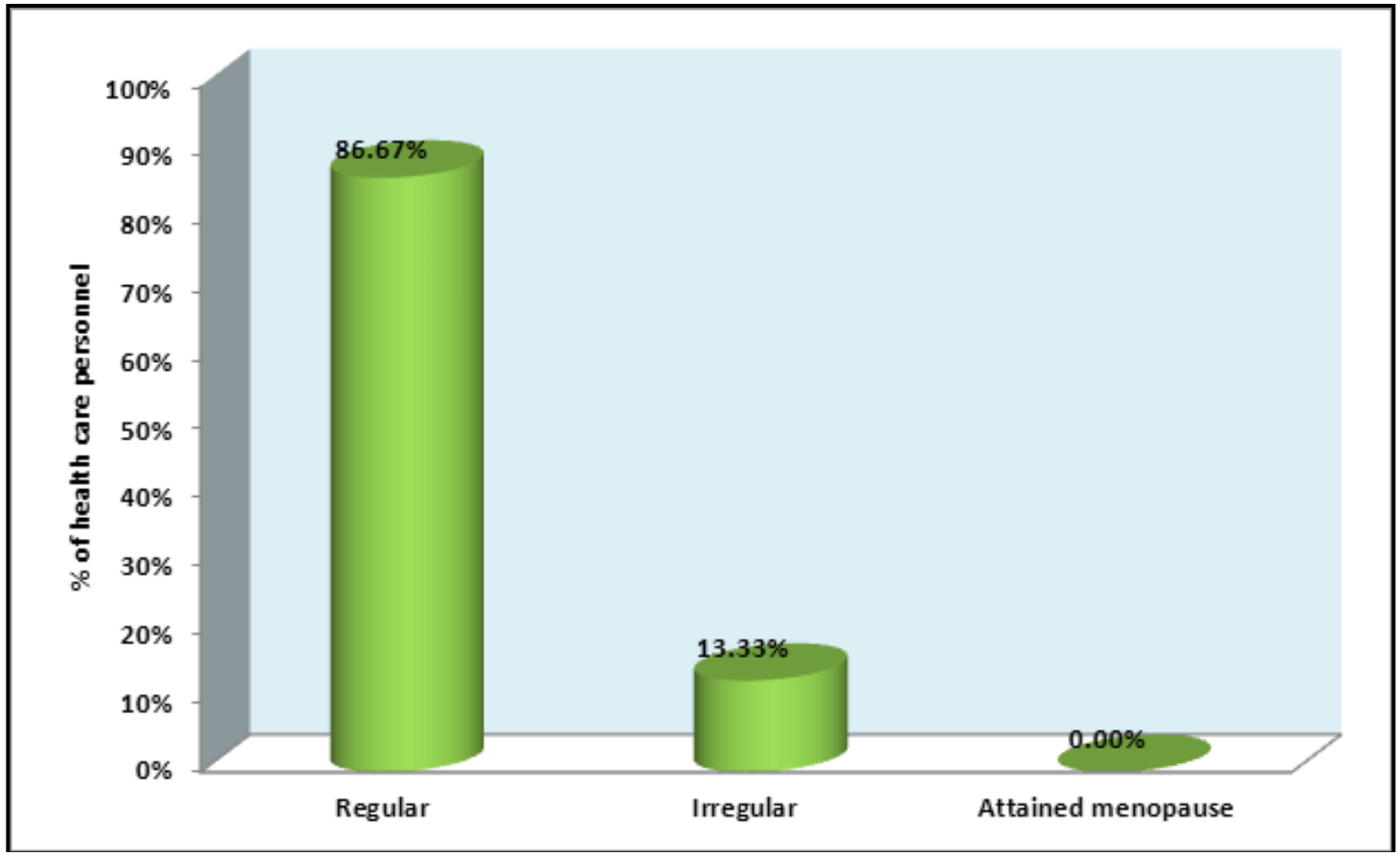


Figure 12: Distribution of menstrual history of the health care workers

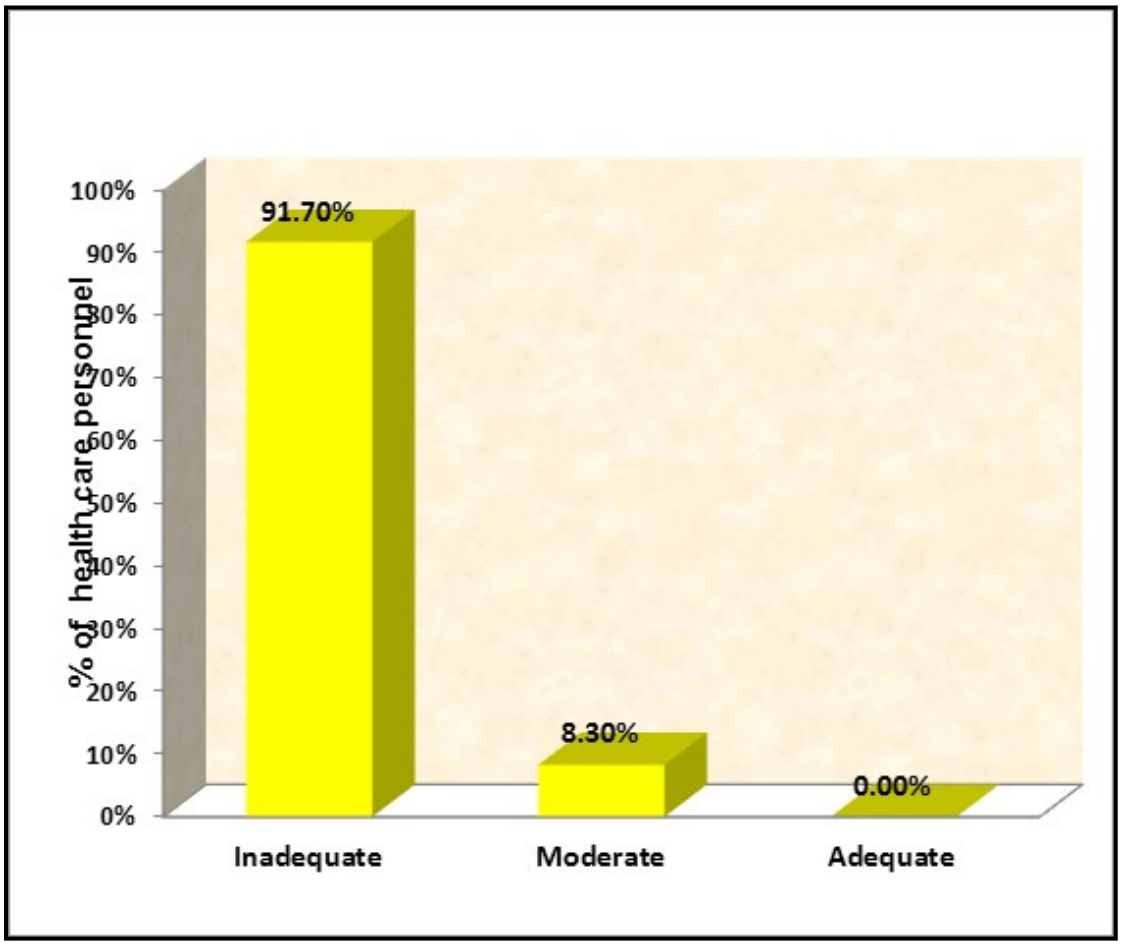


Figure 13: Distribution of pretest level of knowledge of health care workers towards prevention of osteoporosis.

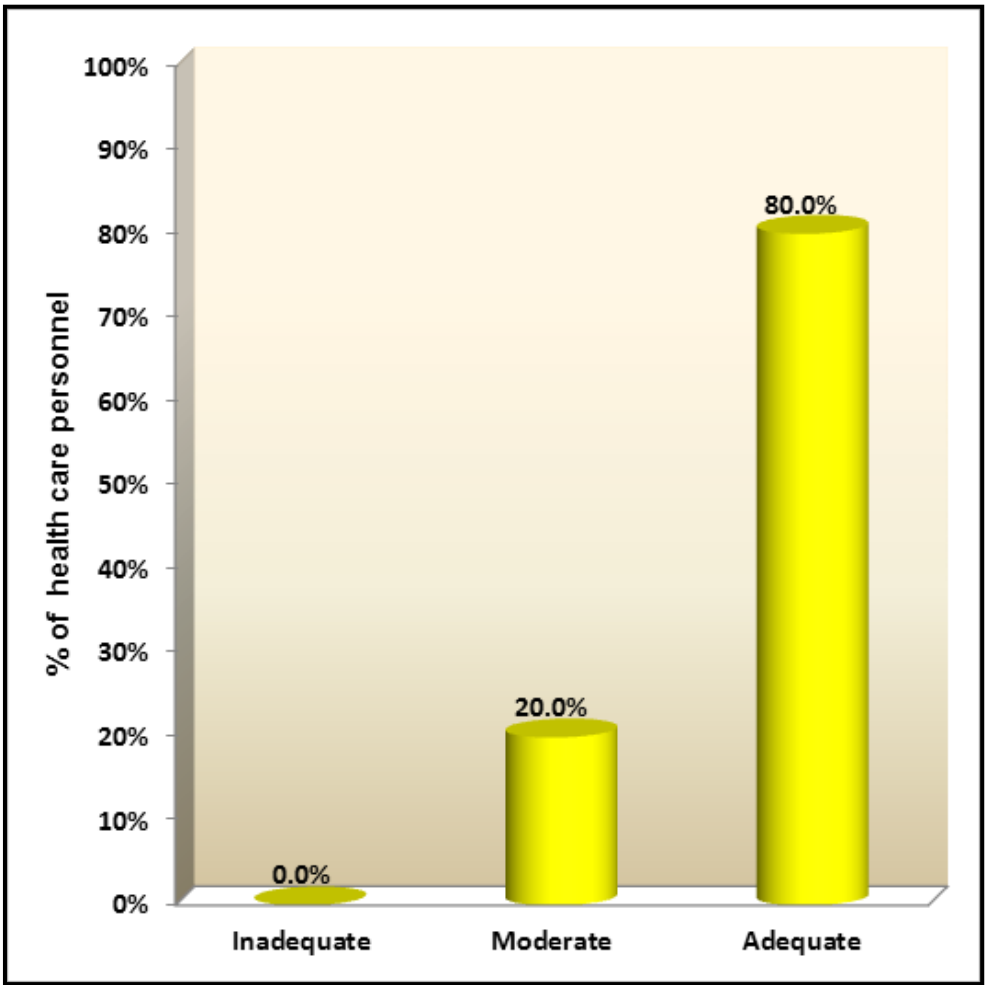


Figure 14: Distribution of post test level of knowledge towards prevention of osteoporosis.

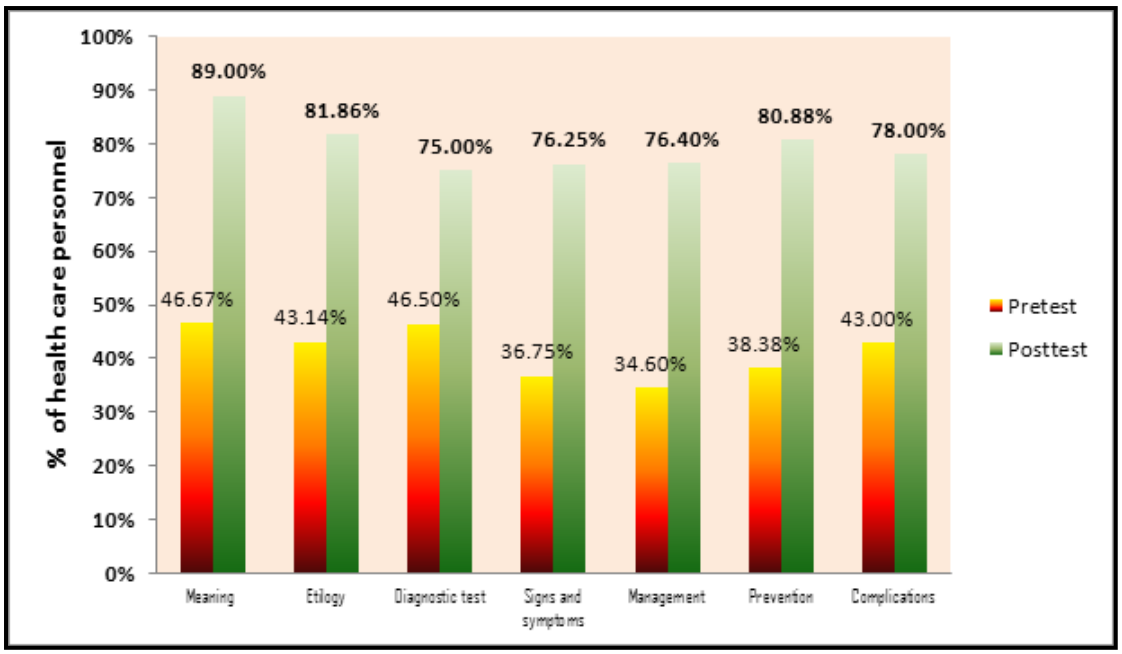


Figure 15: Distribution of domain wise pre test and post level of knowledge on prevention of osteoporosis.

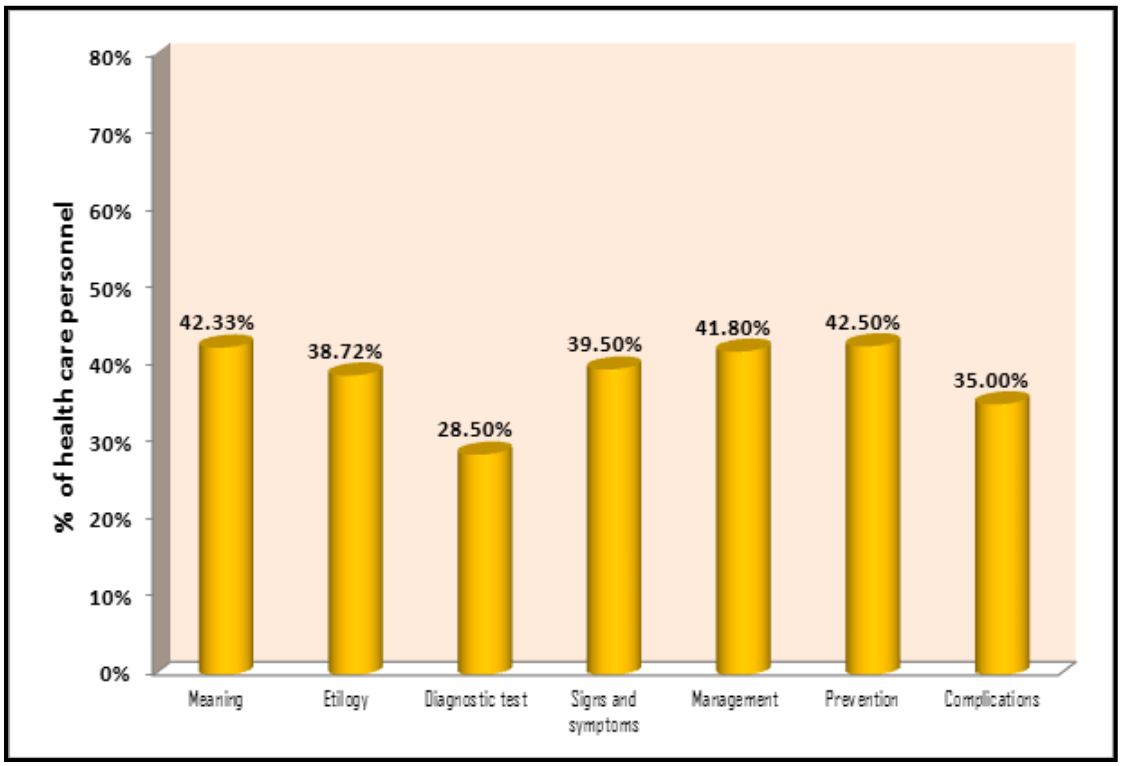


Figure 16: Distribution of domain wise percentage of knowledge gain score of prevention of osteoporosis.

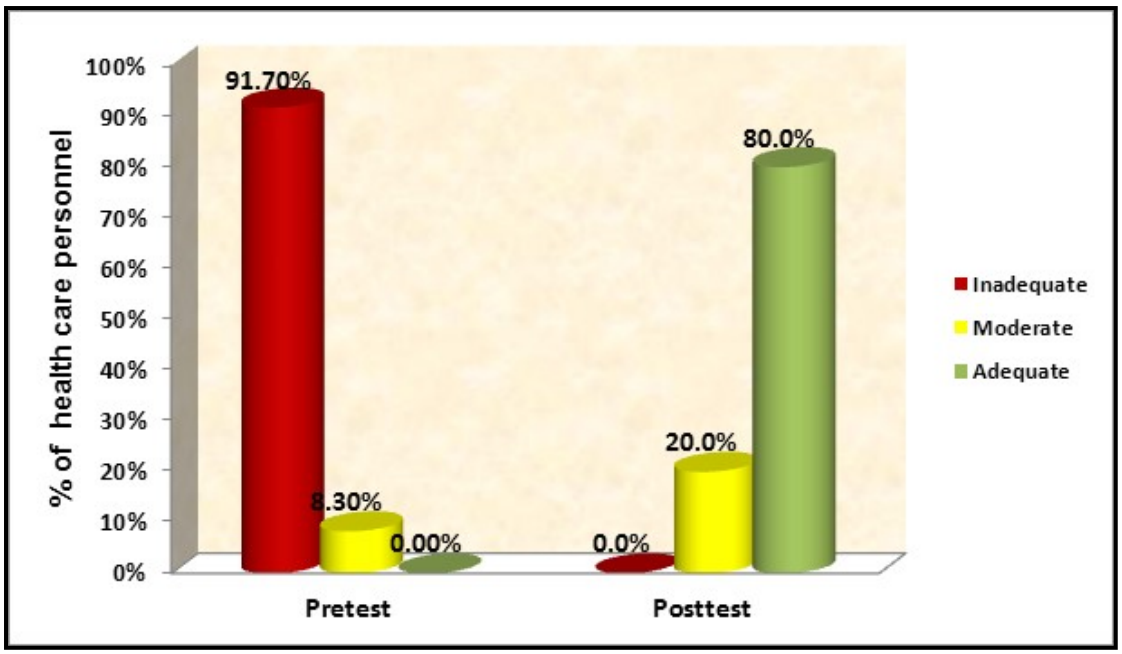


Figure 17: Distribution of post test level of knowledge on prevention of osteoporosis.

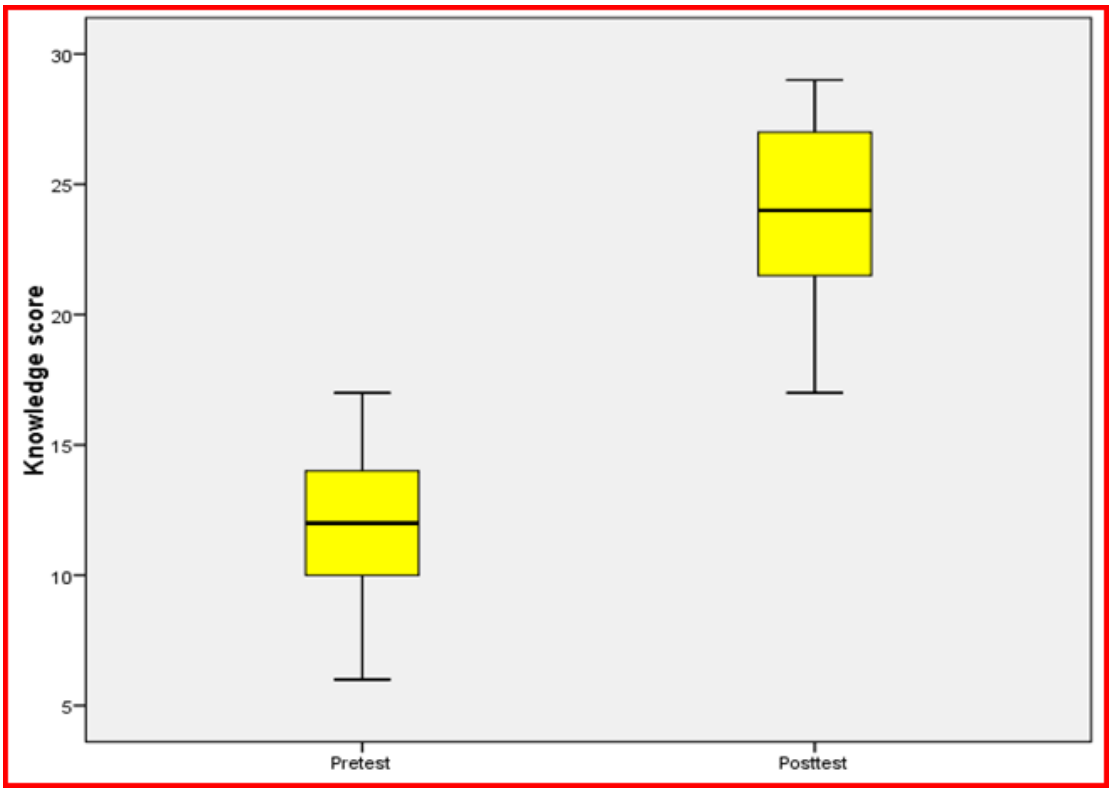


Figure 18: Box Plot Compares the health care personnel pretest and post test knowledge score .

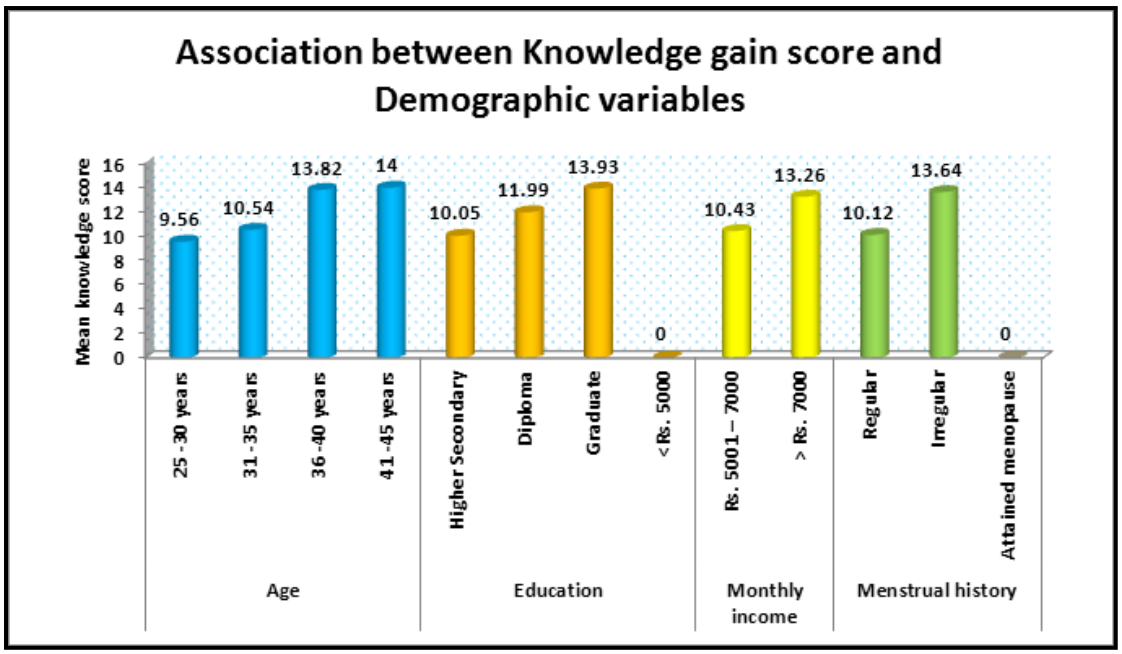


Figure-19: Distribution of association between knowledge gain score and the demographic variables.

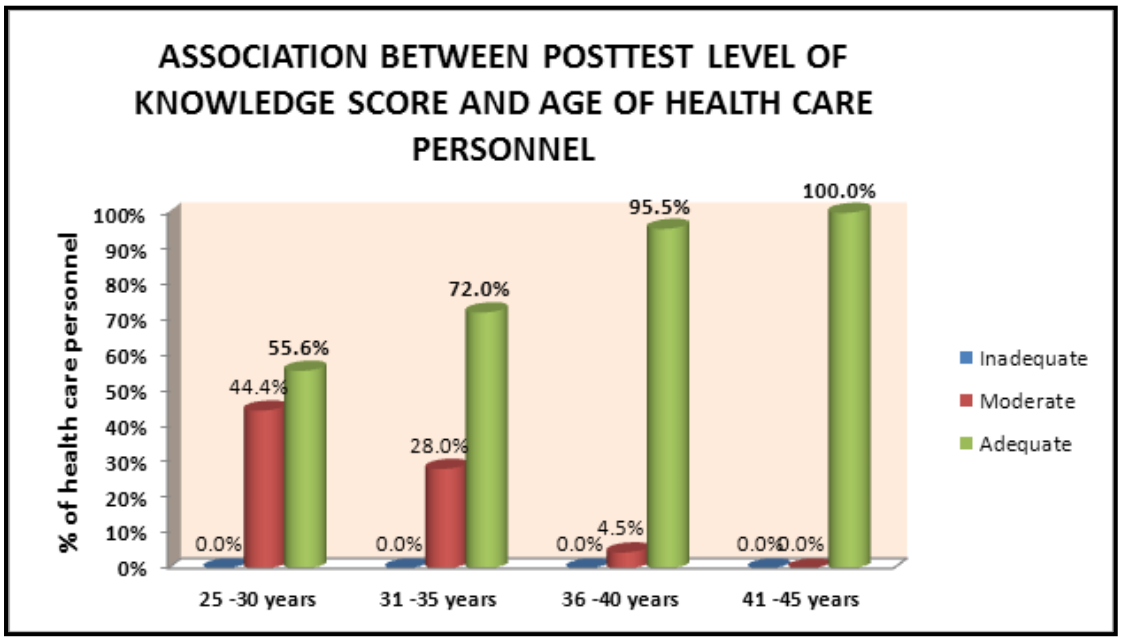


Figure-20: Distribution of association between post test level of knowledge gain score and age of health care personnel.

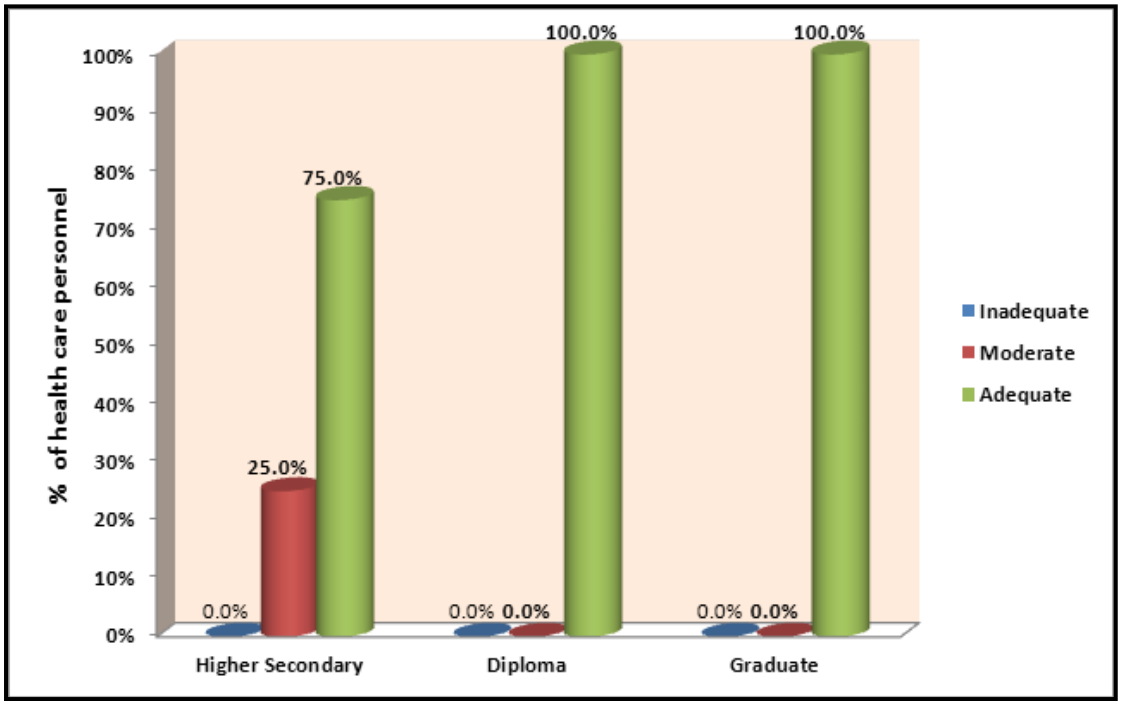


Figure-21: Distribution of association between post test level of knowledge gain score and education status of health care personnel.

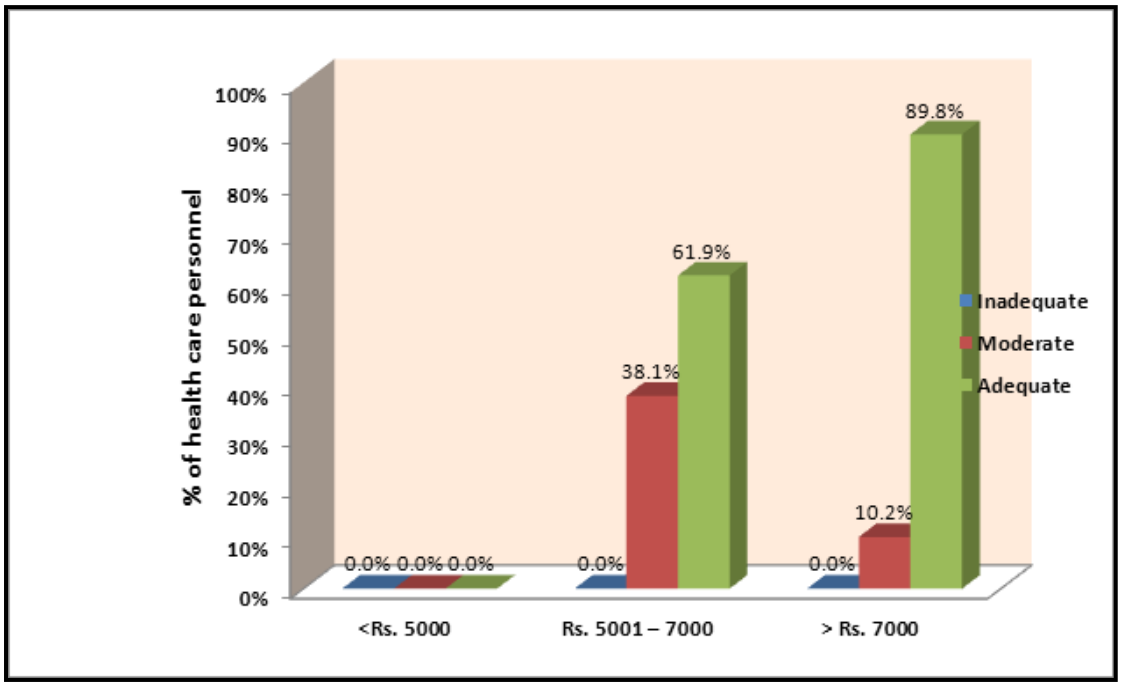


Figure-22: Distribution of association between post test level of knowledge gain score and monthly income of health care personnel.

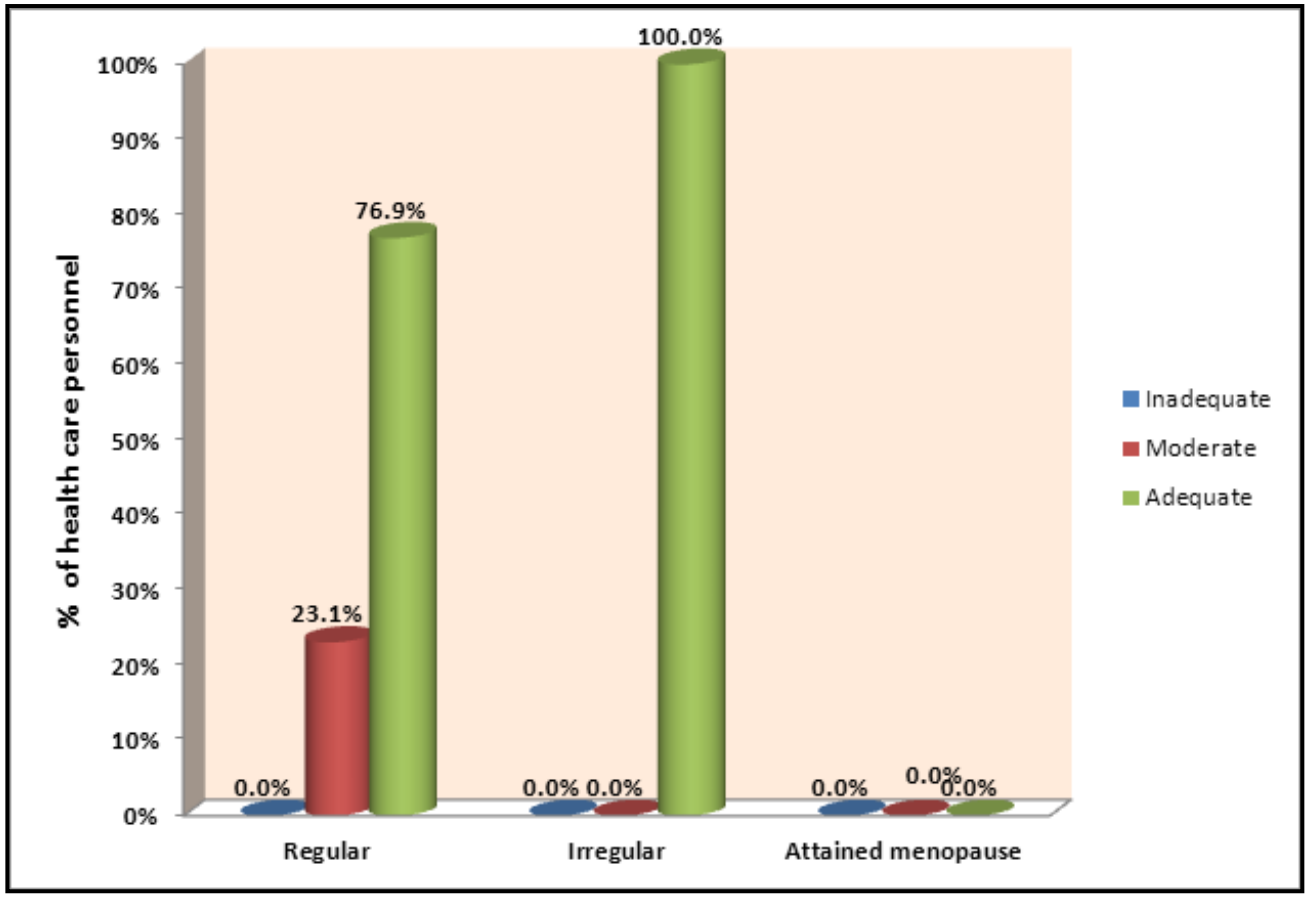


Figure-23: Distribution of association between post test level of knowledge gain score and menstrual history of health care personnel.